CONTENTS

1. Introduction 1-1
1.1 Study Area and Background 1-1
1.2 Western's Reliability and Safety Responsibilities 1-2

2. Coordination and Communication 2-1
2.1 Private Land Contact 2-1
2.2 Noncompliance 2-1
2.3 Plan Amendments and Changes 2-1
2.4 Tracking and Identification 2-1

3. Operation and Maintenance Activities 3-1
3.1 Inspection/System Management 3-1
3.2 Maintenance Activities 3-2
3.3 Equipment/System Upgrades 3-13
3.4 Emergency Response 3-13
3.5 Operation and Maintenance Activity Categories 3-13
3.6 O&M Implementation 3-16

4. Fire Plan 4-1
4.1 Fire Call Directory 4-1
4.2 Fire Season 4-1
4.3 Fire Precaution Measures 4-1

5. Standard Operating Procedures (SOPs) 5-1

6. Project Conservation Measures (PCMs) 6-1
6.1 Development of PCMs 6-1
6.2 Implementation of PCMs 6-2
6.3 Changes to PCMs 6-2

7. GIS Database 7-1
7.1 GIS Data on DVD/External Drive 7-2
7.2 GIS Data Accessibility 7-2
7.3 GIS Definitions 7-2

8. References 8-1

Tables

Table 2-1 TANC and Western Contact Information 2-1
Table 3-1 Sample IVM Prescription 3-5
Table 4-1 Western and TANC Fire Contact Numbers 4-1
Table 5-1 Standard Operating Procedures 5-2
Table 6-1 Special-status Plant Project Conservation Measures 6-3
Table 6-2 Special-status Wildlife and Fish Project Conservation Measures 6-29
Table 6-3 Water Resources/Aquatic Habitat Project Conservation Measures 6-55
Table 6-4 Cultural Resources Project Conservation Measures 6-59

Figures

Figure 1-1 Project Overview 1-3
Figure 3-1 Wire Zone/Border Zone Management Practice 3-4
Figure 3-2 Buffered Vegetation Management 3-4

Appendices

Appendix A Clearance Requirements
Appendix B Herbicide Information
Appendix C Noxious Weed Management
Appendix D Habitat Descriptions
Appendix E Culvert and Drainage Dip Descriptions
Appendix F Additional O&M Requirements and Information

1. INTRODUCTION

1.1 Study Area and Background

The Western Area Power Administration (Western) markets and delivers reliable, cost-based hydroelectric power and related services within a 15-state region of the central and western United States. Within its Sierra Nevada Region, Western owns, operates, and maintains 115-kilovolt (kV), 230-kV, and 500-kV transmission lines in Alameda, Butte, Colusa, Contra Costa, Glenn, Lassen, Modoc, Sacramento, San Joaquin, Shasta, Siskiyou, Solano, Sutter, Tehama, Trinity, Yolo and Yuba Counties, California, and Klamath County, Oregon (see Figure 1-1). These lines include portions of the Central Valley Project (CVP) and the entire Pacific Alternating Current Intertie (PACI) transmission lines. Additionally, Western operates and maintains (also has partial ownership of) the California-Oregon Transmission Project (COTP), which is owned by the Transmission Agency of Northern California (TANC) and comprises three 500-kV lines that occupy one continuous right-of-way (ROW) extending from the Captain Jack Substation in Klamath County, Oregon, to the Tesla Substation in San Joaquin County, California. Besides transmission lines, TANC owns numerous communication facilities throughout Northern California that support COTP operations. Collectively, the CVP, PACI, COTP, seven communication facilities, and associated access roads are referred to as Western's North Area ROW, and comprise the project area.

Separate O&M plans have been prepared for each federal land manager or owner whose lands are crossed by TANC transmission lines or supporting facilities, including Bureau of Land Management (BLM), U.S. Forest Service (USFS), as well as private lands. This particular plan focuses on the O&M requirements within private lands affected by TANC facilities. TANC contributed to the development of this plan.

Western has developed long-range maintenance and management strategies for the high-voltage transmission lines and related facilities on private lands in central and northern California. The objectives of this O&M plan are to:

- prevent operational hazards;
- provide access for maintenance;
- protect facilities from fire;
- control the spread of noxious weeds and protect environmental quality;
- adhere to principles of Western's Integrated Vegetation Management (IVM) Program;
- establish stable, low-growing plant communities within the COTP ROWs;
- develop a technically and economically efficient program; and
- protect public and worker safety.

The purpose of this document is to describe the routine O&M activities proposed by Western associated with its operating agent contractual requirements for maintaining

the TANC transmission lines, substations, communication system, microwave sites, and other ancillary facilities located on private lands. Western is responsible for ensuring that all of its contractors and its employees are aware of the contents of this plan.

1.2 Western's Reliability and Safety Responsibilities

This O&M plan focuses on maintaining TANC-owned facilities in the COTP ROW, thereby ensuring that Western's maintenance crews have safe and all-weather access to the TANC transmission line structures, and maintaining the reliable operation of the TANC transmission system. These objectives are consistent with reliability, safety, and environmental regulations and policies, including the National Electric Safety Code, the Western Systems Coordinating Council, North American Electric Reliability Council (NERC) Reliability Standards (Standard FAC-003-1 – Transmission Vegetation Management Program), and the Western directives for protecting human safety and maintaining system reliability. A detailed white paper listing Western's clearance requirements is provided in Appendix A.

Figure 1-1 Project Overview
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2. COORDINATION AND COMMUNICATION

2.1 Private Land Contact

Clear, efficient, and timely communication and coordination between TANC and Western is necessary for the implementation and monitoring of this O&M Plan as funded by TANC for activities on private lands. In order to ensure this, TANC and Western will each designate representatives assigned to all Western O&M activities on private lands. TANC and Western commit to timely communication, with prompt e-mail and phone responses. Contact information for all representatives is provided below in Table 2-1.

Table 2-1 TANC and Western Contact Information

Name	Title	Phone Number	E-mail
Steve Tuggle	Environmental Resource Manager	Office (916) 353-4549 Cell (916) 804-9721	tuggle@wapa.gov
Don Wagenet	TANC Environmental and Lands Manager	Office (916) 852-1673 Cell (916) 798-3899	dwagenet@tanc.us

2.2 Noncompliance

Western line crews (or representatives/contractors of Western) shall notify Western's Natural Resource Department if unacceptable resource damage occurs or if there is a violation of Western's standard operating procedures or project conservation measures. If damage to a land owner's property occurs, Western line crews (or representatives/ contractors of Western) shall notify Western's Lands Department. Western Lands will immediately contact the land owner and discuss potential remedies.

2.3 Plan Amendments and Changes

Modification and/or changes to the O&M activities on private land will be negotiated among Western, TANC, the land owner, and the appropriate resource agencies (such as the U.S. Fish and Wildlife Service and/or the California Department of Fish and Game). Joint TANC and Western approval will be needed in writing before any plan amendments and/or changes become effective.

2.4 Tracking and Identification

All activities and sites will be tracked by tower numbers in Western's geographic information system (GIS), by township, range, and section numbers, or by specific site name, such as communication sites. These tracking units may be supplemented with 1:24,000 scale topographic maps and/or photos that identify tower numbers and the road system. See section 7 for more details on Western's GIS system.

3. OPERATION AND MAINTENANCE ACTIVITIES

Western's operation and maintenance (O&M) program has been developed to improve the safety and reliability of the electric transmission systems, including the existing North Area transmission lines. The project includes the Pacific AC Intertie (PACI), Central Valley Project (CVP) and California-Oregon Transmission Project (COTP) rights-of-ways (ROW) as well as the TANC-owned/Western-maintained communication facilities. The program focuses on preventing transmission outages associated with vegetation interference (grow-in and fall-in) by maintaining clearances between the existing transmission lines and vegetation within and adjacent to the ROWs. In addition, maintaining safe and reliable access to the ROW is paramount to long-term sustainability of the North Area transmission lines, which must meet the North American Electric Reliability Council (NERC) directives, the Institute of Electrical and Electronics Engineers Inc. (IEEE) clearance guidelines, and Western's Order 430.1.

In general, Western will employ vegetation management practices that will promote low-growing native plant communities[1] within the ROW. The methods selected for vegetation management will depend on the sensitivity of the resources in the area, the existing vegetation conditions, the surrounding topography, and the protective requirements negotiated with resource agencies.

Western has coordinated with TANC on this project and has designed its O&M program to fully comply with Western's requirements as memorialized in applicable Operations and Maintenance Agreements with TANC. Within private lands, Western acknowledges TANC's concerns related to full compliance with State law, maintenance of access roads and the associated issues of potential soil erosion and slope instability. This section specifically outlines the Western/TANC coordinated O&M program on private lands.

3.1 Inspection/System Management

In compliance with Western's *Guidelines, Requirements, Inspections, and Procedures* (GRIP) 19, Western has been conducting aerial, ground, and climbing inspections of its existing transmission infrastructure since initial construction. Western has updated these required inspections under this O&M program. The following paragraphs describe Western's inspection requirements.

3.1.1 Aerial Inspections

Aerial inspections will be conducted a minimum of every 6 months by helicopter or small plane over the entire transmission system to check for hazard trees[2] or encroaching vegetation, as well as to locate damaged or malfunctioning transmission equipment.

[1] Low-growing native plant communities consist of native grasses, shrubs, forbs, and herbaceous species.

[2] Trees located within or adjacent to the easement or permit area that present an immediate hazard to the facility or have the potential to encroach within the safe distance to the conductor as a result of bending, growing, swinging, or falling toward the conductor.

Typically, aerial patrols will be flown between 50 and 300 feet above Western's transmission infrastructure depending on the land use, topography, and infrastructure requirements. In general, the aerial inspections will pass over each segment of the transmission line within a one-minute period.

3.1.2 Ground Inspections

Annual ground inspections will be used to inspect access to the towers/poles, tree clearances, fences, gates, locks, and tower hardware, and ensure that each structure would be readily accessible. They allow for the inspection of hardware that will not be possible by air, and identify redundant or overgrown access roads that should be considered jointly for permanent closure. Ground inspections are typically conducted by driving a pickup truck along the ROW and access roads. Detailed ground inspections will be performed on 20 percent of all lines and structures annually, for 100 percent inspection every 5 years. Inspections will include a shake test, which involves manually shaking the knee braces of the tower to see if there is anything loose on the structure.

3.1.3 Climbing Inspections

Climbing inspections will be performed on all antenna towers at least once every 7 years to identify deterioration in hardware that could not be detected from either ground or aerial patrols. In addition, climbing of transmission line structures will occur if problems were identified during ground inspections. Typically, such activities will involve the use of a pickup truck or bucket truck.

3.2 Maintenance Activities

In general, Western O&M activities for the COTP facilities will include the following:

- **Vegetation maintenance (transmission line and access road ROWs).** Vegetation maintenance ensures that vegetation does not interfere with human safety, transmission line conductors, towers, or other hardware or impede access to the transmission line for maintenance crews. In general, vegetation maintenance can be performed using a variety of methods including manual methods (hand-controlled, powered or non-powered tools such as chainsaws and clippers), mechanical methods (such as heavy-duty mowers), and herbicidal applications (used either to prohibit or retard vegetative growth). As described in Appendix B, past herbicide application in the North Area ROW involved very low quantities of herbicide primarily for stump treatment. Herbicide application under the proposed O&M program would likewise be minimal.

- **Access road maintenance.** Access road maintenance includes activities to ensure that legal access roads are in appropriate condition for all-weather access to transmission lines by maintenance and inspection crews. These activities include grading, surfacing, erosion-control measures, and constructing water diversions such as culverts, ditches, and water bars.

- **Transmission line and associated structure, hardware, and equipment maintenance.** This category of activities includes equipment and system upgrades, routine aerial and ground patrols of transmission lines and ROWs, and transmission system repairs.

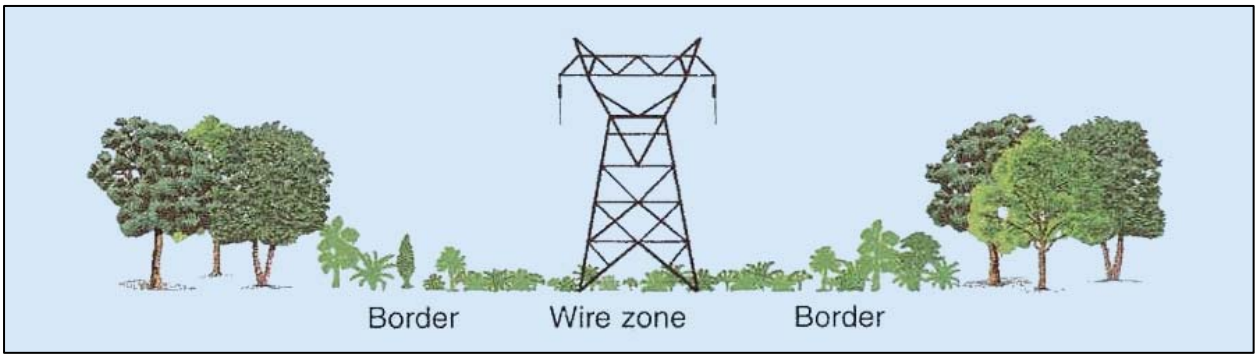
The methods used to complete maintenance activities will be selected in consultation with TANC.

3.2.1 Vegetation Maintenance

Western's proposed Integrated Vegetation Management (IVM) program identifies the appropriate vegetation maintenance approach (also referred to as prescription) for specific areas based on the sensitivity of resources, reliability and safety issues, and environmental laws and regulations. IVM is a practice of managing undesirable vegetation in which action clearance thresholds are established and proactively monitored. For those areas where monitoring indicates the violation of one or more thresholds, all possible control options are evaluated, selected, and implemented. Control options ultimately selected are based on worker and public safety, environmental impact, effectiveness, site characteristics, and economics. Initially, the ROW is restored through the removal of undesirable vegetation. The ROW is then enhanced via various management techniques to protect facilities and their accessibility for maintenance, reduce the potential for fire, and provide habitat for wildlife and a variety of plant species. Under the IVM program, vegetation maintenance options range from wire zone/border zone management (with the greatest vegetation clearance) to buffered vegetation management (with the least vegetation clearance).

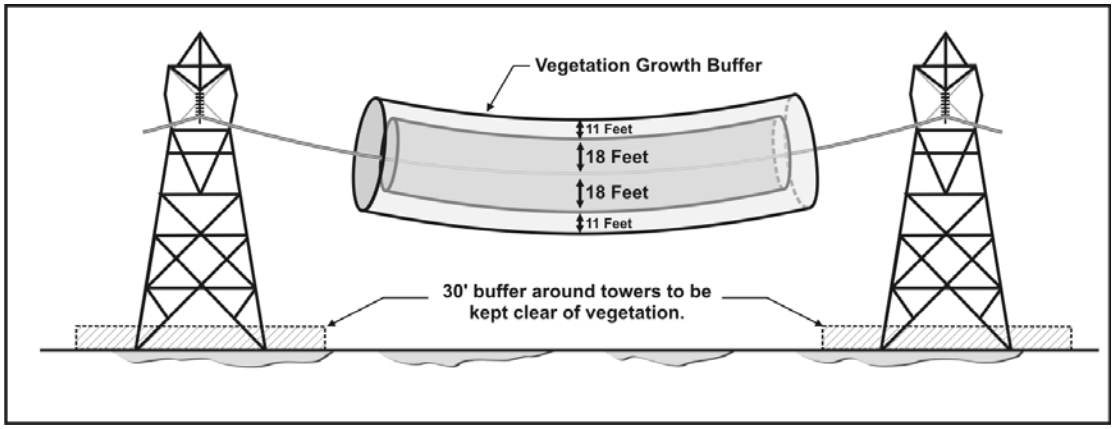
Establishment of a wire zone/border zone is a key consideration in the development of IVM programs. For most areas, Western will adopt a wire zone/border zone approach to ROW vegetation management, which recognizes the ROW as a valuable economic and ecological resource. Key to this concept is the management of the ROW from two perspectives, the wire zone and the border zone. The wire zone includes the ROW area immediately under the transmission wire plus 10 feet on both sides of the outer-most wires. The border zone is the remainder of the ROW on both sides of the wire zone. The goal is to have a low shrub-forb-grass cover type in the wire zone and a taller shrub-forb-grass cover type in the border. Brush and/or tree vegetation should be thinned to a maximum average distance of 30 feet between main stems. Also, this approach will maintain 30 feet of clearance around each transmission tower or transmission structure. Benefits of this approach include a reduction in the frequency of disturbance due to less-frequent vegetation management activities. Figure 3-1 is an illustration of the desired appearance of a ROW subject to a wire zone/border zone management practice.

Figure 3-1 Wire Zone/Border Zone Management Practice



In specific areas where conversion of the ROW from naturally occurring tree-dominated native plant communities into a wire zone/border zone ROW is not appropriate, Western has developed a buffered vegetation management approach that maintains NERC's reliability standards (currently 18 feet of clearance from any vegetation). Under the buffered vegetation management approach, Western will maintain the required clearance between vegetation and any point of the circuit or transmission system. As with the wire zone/border zone vegetation management approach, this approach will maintain 30 feet of clearance around each transmission tower or transmission structure. Benefits of this approach include the reduction of ground-disturbing activities and the related reduction in the establishment of nonnative plant species. Figure 3-2 provides an illustration of the buffered vegetation management approach. A transmission circuit can move vertically depending on the atmospheric temperature and electrical load on the line. Western recommends adding 60 percent to the clearance standard as a buffer to account for the sag in the line during high temperatures and high-load periods. As a result, the buffered vegetation management area will include the mandatory 18 feet Clearance I requirements plus 60 percent of buffer clearance (approximately 11 feet based on the current 18-foot requirement) for vegetation growth and sag in the line (refer to Figure 3-2).

Figure 3-2 Buffered Vegetation Management Approach for 500kV Line



Note: A minimum 23-foot buffer (for clearance and vegetation growth) from conductor to vegetation would be required for a 230-kV buffered vegetation management area

As described above, Western proposes to implement a combination of vegetation management practices that are consistent with the principles of IVM. Depending on the area and the requirements, Western will develop specific prescriptions to manage vegetation along the ROWs (e.g., fuel shade break). The prescriptions will fall between the wire zone/border zone and buffered vegetation management approaches. (See Table 3-1 for example). The following paragraphs describe the general vegetation management methodologies identified for private lands.

Table 3-1: Sample IVM Prescription

Shaded Fuel Break Prescription
Vegetation within a 29-foot (or most recent requirement plus 60%) buffer of the conductor or that can encroach within the buffer will be manually removed.
Elderberry, redbud, fruit trees, and other low-lying vegetation (typically under 12 feet at maturity) will not be removed. Remaining brush (other than desirables) will be manually thinned to an average of 20 to 30 feet of spacing per single shrub or tree, and toyon will be favored for keeping over manzanita, and oaks over knobcone pines.
30 feet of vegetation-free clearance will be maintained around each transmission tower or transmission structure.
Directional pruning, whereby trees are pruned to direct growth away from the conductors, will be used in special situations where it is desirable to leave trees in place as visual screens (e.g., along roads, streams, and rivers) or where easement contracts and land/resource plans dictate such tree removal or trimming criteria (e.g., in orchards and along streams).
Western will promote the reduction of fuel load during vegetation management activities. All vegetation will be chipped (to not exceed 4 inches) and broadcast back into the ROW. Where access is limited, lopping and scattering (that would not exceed 12 inches from ground) must be authorized by Western prior to work.
When trimming is appropriate, all conifers will be trimmed back to the bole of the targeted tree.
Large-diameter trees will be limbed (branches less than 4 inches) and scattered so that the depth of the slash or tree boles does not exceed 18 inches in height.
Mechanical methods will be constrained where soils are susceptible to compaction or erosion.
Rubber-tired tractors will be prohibited on slopes exceeding 40 percent and on soils where there is a high potential for compaction and erosion (except on access roads). Slopes greater than 40 percent will be avoided by all mechanical equipment. The only exceptions will be on existing access roads and in designated areas where adverse impacts can be avoided.
Legal access roads will be brushed to 16-foot width. Western will refer to the map and land owners for questions and identification of access roads.

3.2.1.1 Manual Vegetation Control Methods

Manual vegetation control is defined as the application of powered and non-powered handheld tools or installation of synthetic or natural barriers to manage vegetative growth. The primary benefit of manual methods is selectivity; only unwanted vegetation is removed. The primary disadvantages of manual methods are that they are labor intensive and they are only effective in relatively low-density vegetation. The manual vegetation control techniques employed by Western are described below.

CUTTING

The most commonly used manual method is cutting target plants with power saws. Other manually operated tools such as axes, machetes, and clippers may also be used. This method is highly effective on species that do not resprout. For species that resprout, including most deciduous trees, sprouts may resurge to original height within several years and at much greater density than the original stems. Access for subsequent manual treatments is thereby hindered.

GIRDLING

Girdling involves manually cutting away bark and cambium tissues around the trunk of target trees. This treatment is rarely practiced by Western, but may be appropriate in some cases (e.g., where large trees cannot be felled by cutting) if agreed to by the landowner. Conifer species are killed by girdling, but hardwoods frequently will resprout below the girdle unless the cut is treated with herbicide. Girdling results in standing dead trees or snags, which are left to decompose and fall on their own. Snags are left at the land owner's request and may provide habitat for cavity-nesting species and other wildlife. (Western 2007). Girdling could pose a fuels-management problem by having standing dead fuel mixed with live fuel, which can significantly increase the potential for a crown fire.

TOPPING AND TRIMMING

Topping involves cutting a tree at a specific height to prevent it from growing into transmission lines or microwave beam paths without felling the whole tree. Conifers will not be topped, although this treatment may be used on other species in rare cases as the situation dictates.

Trimming or pruning is the removal of selected branches from tree trunks for the same purposes, along with aesthetic preservation. Directional pruning is practiced by Western to the extent possible, whereby the trees are pruned to direct growth away from the conductors.

Western uses these highly labor-intensive techniques in special situations where it is desirable to leave trees in place as visual screens (e.g., along roads, streams, and rivers) or where easement contracts and land/resource plans dictate such tree removal or trimming criteria (e.g., in orchards and along streams) (Western 2007). Under the buffered vegetation management approach, limbing or trimming of the individual branches that encroach into the buffered vegetation area is the preferred method. For this approach, topping is not acceptable because it may encourage faster growth in an undesirable direction (i.e., toward the transmission lines).

SLASH DISPOSAL/FUELS REDUCTION

Manual cutting operations by Western are sometimes followed by slash disposal techniques designed to reduce fire hazards or to improve esthetic appeal. Slash refers to the debris left within the vegetation treatment area. Depending on land owner preference, access limitations and fire safety, the slash can be treated by one or many of the

following methodologies: it can be chipped and left on site, burned in piles, extracted from sites, or lopped and scattered.

3.2.1.2 Mechanical Vegetation Control Methods

Mechanical methods employ machines to remove or control vegetation. These methods are often nonselective in that certain plants cannot be targeted for removal or avoidance. Mechanical methods, however, may be highly effective at controlling brush on gentle topography with few site obstacles. Most mechanical equipment is not safe to operate on slopes over 30 to 35 percent. Mechanical methods are also constrained where soils are susceptible to compaction or erosion. Site obstacles such as rocks, stumps, or logs also reduce efficiency of these methods (Western 2007). In general, Western plans to use mechanical methods to remove vegetation from the existing ROWs, where feasible.

3.2.1.3 Herbicide Control Methods

Under the proposed action, Western may expand its use of herbicides for vegetation management. Western's use of herbicides is consistent with local herbicide-use regulations or guidelines.

An herbicide is a chemical used to kill or suppress the growth of plants. The most satisfactory classification of herbicides is based upon how they are used for weed control and how they work. Accordingly, herbicides are classified into two major types:

- **Selective herbicides** kill certain plants but do not significantly affect the most desirable plants. For example, some selective herbicides kill broadleaf plants (including brush) but do not affect grasses.
- **Nonselective herbicides** are chemicals that are generally toxic to plants without regard to species. Plants differ in susceptibility to any specific chemical and the choice of herbicide and application rate depends on the species to be controlled.

Western proposes using only those herbicides that have been approved for use in ROW maintenance based on evaluations of toxicity, solubility, soil adsorption potential, and persistence in water and soil. Further, these herbicides must be registered for use in California by the U.S. Environmental Protection Agency. Appendix B provides detailed information on these herbicides. Western will use only employees or contractors with required applicator licenses/certificates.

Western will follow strict chemical label instructions, safety procedures and best management practices (BMPs) while applying herbicides. These practices, described in Western's Integrated Vegetation Management Guide and Transmission Vegetation Management Program (IVM) (Western 2007), are a part of the O&M Plan and will include the following:

- Reviewing and implementing federal and California pesticide regulations for restrictions on use of particular herbicides;

- Observing site conditions to match specific herbicides and application methods to those conditions, including the plants that are to be controlled, seasonal limitations, presence of sensitive environmental areas (such as endangered species, habitat, and wetlands), presence/proximity of non-target vegetation, and vegetation conditions (such as height and amount of tall-growing brush);
- Reviewing and implementing Western's environmental protection requirements;
- Following all restrictions and guidance listed on the herbicide label;
- Calibrating equipment to ensure proper mixture and volume of herbicide;
- Selecting the proper nozzle tip to avoid overspray;
- Handling herbicides to avoid accidental spills and ensure worker and public safety;
- Adjusting herbicide application methods based on wind speed and direction, which may include avoiding application on windy days when drift potential is greatest.

There are several different ways to apply herbicides, and the method selected depends on the type of control needed, the type of vegetation, and the site situation (i.e., site conditions, location). Application methods are described below and include stump treatment, basal spray treatment, foliage spray treatment, soils treatment, and under surfacing materials treatment.

STUMP TREATMENT

Stump treatment is used when vegetation is cut to the ground line. This method is primarily used: 1) after initial clearing and 2) during maintenance clearing when trees have grown too tall to use foliage spray or when drift is an issue (Western 2007). Western currently applies either an oil-based herbicide mixture or a ready-to-use non-oil solution.

BASAL SPRAY TREATMENT

This treatment method involves spraying the lower part of the stem and the exposed roots of incompatible vegetation with an oil-based formula. Basal spray treatment will be used on resprouting species and identified nonnative and invasive plant species. This method is more selective than a foliage spray and does not cause immediate brownout of vegetation (Western 2007). In general, this treatment is prescribed where:

- brush is too tall to use foliage spray without causing unacceptable drift;
- the ROW is adjacent to cropland, residences, susceptible vegetation, or other sensitive areas, and drift is a problem;
- the ROW contains a high density of compatible species, and a foliage spray cannot be applied without injuring the compatible cover.

FOLIAR SPRAY TREATMENT

Foliar spraying is a common method of applying herbicides on brush up to 15 feet tall. This method uses a water-based formulation that is applied to the entire plant's foliage and stems. Because it is sprayed into the air, drift can be a problem under certain atmospheric conditions. Also, most foliage sprays cause immediate brownout of vegetation. This method will not be used in areas where drift and brownout are concerns (e.g., adjacent to cropland, residences, susceptible vegetation, or other environmentally or visually sensitive areas) (Western 2007).

3.2.2 Access Road Maintenance

Western acknowledges that issues related to maintenance of access roads are of primary concern to TANC. As part of the O&M program, Western must maintain safe and reliable access roads to the existing infrastructure. Western will comply with applicable land owner specifications. The following paragraphs describe Western's approach to maintaining TANC's existing legal access roads.

For all access road work, any equipment will be cleaned and inspected prior to operations. All ditches, existing culverts, and inlet assemblies will be cleaned. Slash and debris may be scattered, but will not be placed near or in stream channels, culvert inlets, or ditches. There will be a clearing limit of 4 feet on both sides of the existing roadbed. Trees over 6 inches in diameter within the clearing limit that do not impede blading will be limbed to a height of 14 feet and left standing.

The following paragraphs describe in additional detail Western's approach to maintaining its existing legal access roads

3.2.2.1 Clearing Culverts and Ditches

Existing culverts and ditches must be kept free of debris and obstructions. Ditches on newly constructed roads could require frequent cleaning and checking after each major storm until re-vegetation has occurred. It is a goal of Western to check each culvert at least once a year after spring rains and before winter rains; additional culvert checks will be performed as needed to keep culverts clean and unobstructed. During inspection and clearing of culverts and ditches, Western will:

- leave grass in the ditch unless it has filled with sediment and is no longer functioning;
- check for undercutting road shoulders and banks;
- check culverts for blockage by debris;
- not leave a berm on the side of the road; berms will channel water down the road.

3.2.2.2 Culvert and Ditch Specifications

CULVERTS

A culvert will be constructed of corrugated metal or corrugated steel. The area 10 feet upstream and downstream of a culvert and a width 2 feet wider than its diameter will be cleared.

Western understands the potential for adverse environmental effects if a culvert is installed without consideration of existing biological resources. As such, Western will consider the following guidelines when constructing new culverts:

- Whenever possible, low-water crossings will be installed instead of a culvert;
- Applicable permits (including national regulatory permits for wetlands and state water-quality certification and streambed alteration) will be obtained;
- Projects will be scheduled so that they do not coincide with fish migrations, spawning, and egg incubation periods;
- The appropriate erosion and sediment controls will be installed on disturbed soils as soon as possible consistent with the terms and conditions of all applicable permits.

Culverts will be sized and installed to be large enough to pass a 100-year flood at 67 to 75 percent of capacity. They will be designed to accommodate water velocities and flows necessary for fish, frogs, and other aquatic species to swim through the culvert. Culvert diameters will match the width of the stream at an average point. Stream widths will be measured at the top of the banks as this may best represent the stream size during normal high water or bank-full conditions. The angle or slope of the culvert will be equal to the stream grade to maintain an acceptable water velocity for fish passage. For culvert design specifications, refer to drawings in Appendix E. The designs presented in Appendix E are example culvert design specifications that may be used in the field depending on the unique site characteristics, while maintaining the 100-year flood at 67 to 75 percent of capacity.

WATER BARS

A water bar is a ridge that directs water off the road. Water bars will be spaced 200 feet apart for roads with a grade under 6 percent, 125 feet apart for grades between 6 and 10 percent, and 50 feet apart for grades between 10 and 13 percent. For water bar design specifications, refer to drawings in Appendix E.

ROLLING DRAIN DIPS

A rolling drain dip likewise allows for cross-drainage. It consists of a shallow dip followed by a hump, along with an earth berm at the edge of one side of the road. For rolling drain dip design specifications, refer to drawings in Appendix E.

3.2.2.3 Removing Slide Debris

Slide debris can cause increased sediment loads in established roadway drainage systems as well as in established streams. In order to prevent this, Western will not sidecast removed material. Should slide debris occur, the cause will be evaluated to determine if removal of the slide debris could exacerbate slope instability by undercutting the toe of the slope. In some instances, removal of some debris may be required and stabilization of the remaining material may prevent further problems. The appropriate erosion and sediment controls will be installed on disturbed soils as soon as possible (i.e., before site work is finished). Mulching and other forms of erosion control will be used to prevent erosion.

3.2.2.4 Repairing Road Structures

In order to maintain safe access, associated road structures will be routinely inspected and maintained. Road structures in need of repair may include bridges, culverts, cattleguards, and fences. Should a structure need to be modified, maintenance activities will be designed to reduce erosion and sedimentation in streams. Western will employ the following BMPs:

- Be consistent with the most current road repair and drainage improvement methods recommended by TANC;
- Protect vegetation and minimize the amount of disturbance of plants and soils by equipment;
- Work quickly to minimize the time disturbed soils are exposed;
- Divert run-off away from exposed soils into vegetated buffers;
- Disperse concentrated stream flows;
- Provide adequate run-off channels;
- Trim slopes to stable configurations and revegetate as soon as possible;
- Comply with land manager design and engineering requirements as well as erosion control and slope stability practices for new or modified structures;
- Inspect new or modified structures at least once a year after spring rains and before winter rains;
- If repairs are made under emergency situations, mitigate the damage created during emergency road repairs as soon as possible to prevent further damage and erosion.

3.2.2.5 Controlling Erosion

Western will work with funding and guidance from TANC to review and annually prioritize roads for repair. This will involve monitoring for erosion as well as rehabilitating gullies and rills.

Prior to October 15th each year, Western will monitor the COTP ROW for erosion and rehabilitate all gullies and rills deeper than three inches occurring within the ROW. Western will be responsible for the placement and use of adequate erosion control structures and materials. Mulches used will contain viable native plants or seed. Western will monitor access route ROWs outside of the main ROW annually (or during the first two years of the program) and at least once every five years thereafter.

3.2.2.6 Repairing Damaged Access Roads

For damaged access roads or roads with existing drainage and erosion problems, Western will replace the surface material lost or worn away, then grade and shape the road surface, turnouts, and shoulders to their original condition, or better. Watering may be required to control dust and to retain fine surface rock.

This program would make it a goal to eliminate old erosional features while proactively preventing new problems. While repairing damaged access roads, Western will adhere to the following BMPs:

- Minimize the amount of disturbance of plants and soils by equipment;
- Work quickly to minimize the time disturbed soils are exposed;
- Divert run-off away from exposed soils and into vegetated areas;
- Disperse concentrated stream flows;
- Provide adequate run-off channels;
- Trim slopes to stable configurations and re-vegetate as soon as possible;
- Inspect road quality and structures at least once a year after spring rains and before winter rains;
- If repairs are made under an emergency situation, mitigate any damage created as soon as possible to prevent further damage and erosion;

3.2.2.7 Removing Access Roads

Based on recommendations from Western, TANC may consider removing access roads that are no longer needed. Western will annually recommend roads for removal by providing TANC with a legal description of the road segments that can be abandoned for COTP O&M purposes. Upon TANC approval, Western and TANC will cooperatively develop a plan to stabilize or restore the abandoned roads to a natural state over a 5 to 6 year period.

3.2.3 Transmission System Maintenance

The need for repairs and preventative maintenance activities is based on the results of inspections or other reports. Repairs and preventative maintenance activities include: replacing insulators; tightening, replacing, or repairing towers/poles or hardware; and looking for ROW encroachments. These activities will be performed wherever damage or deterioration of transmission lines or facilities poses a threat to safety or reliability. The type of equipment needed may include a pickup truck, bulldozer, backhoe, bucket truck, and hand tools, and will depend on the required repair or maintenance activity. For major activities, Western will coordinate with TANC and the land owner in advance of conducting the activities.

3.3 Equipment/System Upgrades

In order for the transmission system to operate in a safe, reliable, and efficient manner, Western needs to replace or upgrade system components based on the age, condition, and technology of the piece of equipment. System upgrades or replacements will include: new conductors, capacitor banks, transformers and breakers, small solar power arrays, and other electrical equipment.

3.4 Emergency Response

Emergencies are any event requiring immediate response to a condition by Western personnel. These may include, but are not limited to, car-to-pole contacts, downed poles, fires, transformer outages and or outages due to down wire as a result of an unexpected situation (e.g. extreme weather, fallen trees, etc.). Responding crews will vary in number and equipment needs depending on the size and severity of the emergency.

Western will assess the situation and then contact Western Dispatch Office. Western personnel will secure the site for worker and public safety. Western Dispatch Office will contact appropriate internal and external contacts to remediate, repair, or mitigate the situation. Crews may be required to respond to an emergency in a remote area without roads. In areas without vehicle access, helicopters may be used to respond quickly to emergencies.

3.5 Operation and Maintenance Activity Categories

The following is a list of the O&M activities according to the associated level of potential effect to sensitive resources. Note that substation and facility maintenance activities are restricted to the confines of the existing fenced substation or facility perimeter.

- Category A – Inspection and Minor Maintenance Activities
- Category B – Routine Maintenance Activities
- Category C – New Infrastructure

Western has developed project conservation measures (PCMs) designed to protect natural resources within the North Area ROWs and access roads. These PCMs were designed to reduce potential impacts and are based on the O&M categories named above and described below. PCMs include identification of limited operating periods, pre-activity flagging of resources, and equipment restrictions. Western will notify land owners of activities that require advance consultation.

Section 6 provides a list of PCMs that Western will follow. Sections 3.5.1 through 3.5.3 provide descriptions of each O&M category.

3.5.1 Category A – Inspection and Minor Maintenance Activities

Maintenance activities in Category A are primarily inspection type actions, with some minor repairs that would cause minimal, if any, soil disturbance. These maintenance tasks will cause no or nominal effects to sensitive resources as long as standard operating procedures (SOPs) are followed. (See Table 5-1). Typical activities under Category A include but are not limited to:

Substation Maintenance

- Maintenance and replacement of transformers and breakers
- Servicing and testing of equipment at existing substations, including oil change-outs
- Installation or replacement of bushings
- Cleaning or replacement of capacitor banks
- Maintenance or installation of propane tanks within a substation yard
- Maintenance of switches, voltage regulators, reactors, tap changes, reclosers and valves
- Replacement of wiring in substations and switch yards
- Replacement of existing substation equipment including regulators, capacitors, switches, wave traps, radiators, and lightning arresters
- Installation of cut-out fuses
- Adjusting and cleaning disconnect switches
- Placement of temporary transformer
- Maintenance, installation, and removal of solar power array and controller
- Installation of foundation for storage buildings above ground mat within existing substation yard
- New footings
- Ground mats repairs
- Remediation of small spill of oil and hazardous materials (less than 1 gallon)
- Clearing vegetation by hand within the property boundary of a fenced substation
- Application of soil sterilants and herbicides within the property boundary of fenced substation

Transmission Line Maintenance

- Ground and aerial patrols
- Ground wire maintenance
- Aircraft warning device maintenance
- Insulator maintenance
- Bird guard maintenance
- Cross arm maintenance on wood pole transmission line structures
- Emergency manual removal and/or pruning of danger trees or vegetation
- Steel members of steel transmission line structures
- Hardware on wood and steel transmission line structures
- X brace and knee brace maintenance
- Dampener maintenance
- Ground rod maintenance
- Armor rod maintenance and clipping-in structures
- Conductor upgrade/maintenance
- Emergency placement of rocks at bases of poles or structures to stabilize small eroded areas
- Remediation of small spill of oil and hazardous materials (less than 1 gallon)
- Antennae maintenance
- Structure mile marker maintenance

Communication System Maintenance

- Microwave radio tower maintenance
- Communication tower and antennae maintenance
- Light beacon maintenance
- Microwave dish maintenance
- Parabolic dish maintenance
- Periodic antenna climbing inspections

Facilities Maintenance

- Building maintenance including interior and exterior painting; and roof, ceiling, floor, window, and door maintenance
- Clearing vegetation by hand within the property boundary of fenced maintenance facilities
- Application of soil sterilants and herbicides within the property boundary of fenced maintenance facility

3.5.2 Category B – Routine Maintenance Activities

Maintenance activities in Category B include some of the typical repair tasks that occur along the COTP ROW. Category B actions have the potential to cause minimal effects to sensitive resources. Category B maintenance equipment could include, but is not limited to, rubber-tired vehicles such as bucket trucks, backhoes, front-end loaders, cranes, auger trucks, bobcats, masticators, and pole trucks. In addition to SOPs, Western has committed to implementing all PCMs identified for Category B maintenance activities. Typical activities under Category B include but are not limited to:

Transmission Line Maintenance

- Maintenance and repair of existing culvert
- Remove soil deposition around tower legs
- Ground anchors maintenance
- Fill in erosional features on access roads
- Remediation of small spill of oil and hazardous materials (between 1 and 10 gallons)
- Grading existing access roads
- Application of herbicides
- Place fill or rock(s) around existing culverts
- Place fill or rock(s) around existing towers or structures
- Vehicle and equipment staging
- Installation and repair of fences and gates
- Installation or replacement of overhead and underground power, communication, or ground electrical line (less than 100 feet)
- Manual removal and/or pruning of danger trees or vegetation
- Mechanical vegetation management by means of masticators, or other similar mechanical equipment

Communication System Maintenance

- Foundations or footings maintenance
- Installation of underground and overhead water, power, communication, or ground electrical line (less than 100 feet)
- Installation of cellular equipment onto existing infrastructure
- Maintenance and repair of existing culverts
- Remediation of small spill of oil and hazardous materials (between 1 and 10 gallons)
- Application of soil sterilants and herbicides

3.5.3 Category C – New Infrastructure

Category C maintenance activities are generally those that have the potential to disturb large areas and will utilize heavy equipment to complete particular tasks. Category C maintenance equipment could include, but is not limited to, the use of steel tracked and/or rubber tired bulldozers, graders, backhoes, and front-end loaders. Typical activities under Category C include, but are not limited to:

Transmission Line and Communication System Maintenance

- Adding new access roads
- Installation of new culverts
- Installation of new foundations for storage building at existing facilities
- Erosion-control projects at existing facilities
- Reconductoring
- Mechanical vegetation management by means of bulldozers or other similar mechanical equipment
- Tower/pole relocation/realignment/replacement within existing ROW
- Installation or replacement of overhead and underground power, communication, or electrical line (greater than 100 feet)
- Remediation of small spill of oil and hazardous materials (greater than 10 gallons)

3.6 O&M Implementation

As described in section 7, Western has developed a comprehensive O&M Geographic Information Systems (GIS), which will be used as the baseline for proactively managing the sensitive resources in the field. This GIS system was partially funded by TANC, and developed for Western's line crews and environmental compliance staff, as well as TANC.

Western has color-coded each span based on the resource sensitivities identified within the ROW, as well as the potential for the maintenance categories (A, B, C) to cause adverse effects. The following bullets provide the negotiated actions for each color.

- **Green** = Sensitive resources absent (no PCMs need to be followed); maintenance crews may proceed while complying with SOPs.
- **Yellow** = Maintenance crews must comply with applicable PCMs and SOPs; contacting Western's Natural Resources Department is not necessary unless there are questions regarding PCMs.
- **Red** = PCMs are of sufficient complexity to necessitate contacting Western's Natural Resources Department; securing a qualified monitor or consulting with tribes, SHPO, or other federal agencies may be required.

4. FIRE PLAN

This fire plan establishes standards and practices that will minimize the risk of fire danger, and in case of fire, provide for immediate suppression and notification.

4.1 Fire Call Directory

TANC understands that Western will be completing maintenance activities within the COTP ROW throughout the year. Should Western (or a representative of Western) identify a potential fire during maintenance activities, Western (or a representative of Western) will immediately call 911 and report the location and extent of the fire. In addition, TANC requests that Western (or a representative of Western) contact TANC (within 15 minutes of identifying a potential fire) using the phone numbers listed below in Table 4-1. The phone numbers listed in Table 4-1 will be included in all contracts between Western and private maintenance contractors. In addition, all Western line crew supervisors will have the numbers readily available, so that communication between Western, local fire agencies, and TANC is conducted in a timely manner.

Table 4-1 Western and TANC Fire Contact Numbers

Name	Daytime #	After Hours #
Western Dispatch Office	(916) 353-2201	Same
Brian Adams, Western Lineman Foreman III	(530) 247-6733 (530) 604-4310	(530) 604-4310
Bryan Griess, TANC	(916) 852-1673	(916) 712-1971

The fire contact directory will be updated by Western and TANC each year (preferably before April 1). Updates will include dispatch centers, key contacts, titles, and daytime and after-hour phone numbers. The updated directory will be produced by Western and distributed to all appropriate Western and TANC representatives.

4.2 Fire Season

The fire season is largely dependent on the weather, fuel moisture and the calculated fire indices. Fire season typically starts in June and ends in early October or when a season-ending rain event occurs. Most wildland fire starts occur in July and August; the most severe fires typically occur in August and September, when fuel moistures reach their yearly minimum. It should be noted that wildland fires have occurred in the area in all twelve months of a calendar year.

4.3 Fire Precaution Measures

4.3.1 Fire Conditions

During periods of high temperatures, dry vegetation, and/or high winds, Western (or a representative of Western) will be responsible for checking daily fire levels during fire season and to cease all operations when fire levels require emergency precautions. Depending on the fire risk, Western may schedule early morning work with no or limited

work in the afternoon hours. Western may also require the maintenance contractor to cease operations at any time due to a fire danger.

In extreme fire conditions, Western may require cessation of operations on a day-by-day basis based on the fire index. During fire season, Western (or a representative of Western) will have one full-time person (fire watch) for the sole purpose of monitoring the fire index and watching the mechanical operations for fire ignition. The fire watch will monitor the humidity level and cease mechanical operations if the humidity level falls below 20 percent.

Western (or a representative of Western) must stay on site one hour (or longer if required by land owner) after the end-of-the-day mowing operations to ensure fire safety.

4.3.2 Water Supply for Fire Fighting

For areas in remote locations or those areas that require mechanical mastication, a 300-gallon tank (minimum) filled with water will be stored at the worksite(s) during the fire season. The tank will be equipped with an engine-driven pump and a minimum of 250 feet of hose. The water tank will be operational, mobile, and kept at the worksite.

4.3.3 Engines Equipped with Spark Arresters

All internal and external combustion engines at the worksite will be equipped with spark arresters on the exhaust. The arresters must meet the requirements established by the SAE Standard J335. The spark arresters must be properly installed and maintained at all times.

4.3.4 Other Fire Requirements

All maintenance crews using masticator machines will carry a working radio or cell phone to summon help in the event of a fire. During times of high fire danger, masticator machines will concentrate on standing trees, leaving high stumps, and keeping the chipper out of rocks. All equipment, including pickups/service vehicles and machines, will be equipped with a shovel, water pump, and fire extinguisher. Western (or a representative of Western) will follow all appropriate fire restrictions issued by Federal and state agencies.

5. STANDARD OPERATING PROCEDURES (SOPs)

Western has developed a set of SOPs to reduce public and worker safety hazards and limit the potential impacts to the environment associated with the maintenance activities described in section 3. These SOPs will be followed at all times, during all O&M activities, and throughout the entire project area. At a minimum, Western will conduct an annual training class on these procedures for all maintenance crews. Table 5-1 provides a list of SOPs by issue area.

These SOPs will also be included in all contracts and agreements with maintenance contractors. All contractors will be responsible for understanding the requirements, schedule limitations, and notification procedures associated with each SOP. Prior to each maintenance job, Western will reiterate to the contractor the requirement to comply with the SOPs during all phases of the maintenance job.

Maintenance crews (Western personnel or contractors) will notify Western's Natural Resources Department of any noncompliance with an SOP. Western will review the noncompliance notice and discuss any remedies associated with the noncompliance action with TANC, the land owner, and other potentially affected resource agencies.

Table 5-1 Standard Operating Procedures (SOPs) by Issue Area

SOP	Description
AESTHETICS	
AES-SOP-1	Material storage and staging areas will be selected to minimize views from public roads, trails, and nearby residences, to the extent feasible. During O&M, the work site will be kept clean of debris and construction waste. For areas where excavated materials will be visible from sensitive viewing locations, excavated materials will be disposed of in a manner that is not visually evident, in coordination with the land owner (as appropriate), and in compliance with applicable regulations.
AES-SOP-2	Replacement structures and hardware (e.g., conductors and insulators) will be replaced in kind, to the extent feasible, while ensuring that structures and hardware that are visible from sensitive viewing locations will have appropriate colors, finishes, and textures to most effectively blend into the visible landscape. If structures are visible from more than one sensitive viewing location, and backdrops are substantially different from different vantage points, the darker color will be selected, because dark colors tend to blend into landscape backdrops.
AES-SOP-3	Maintenance operations will be conducted in a manner that limits unnecessary scarring or defacing of the natural surroundings to preserve the natural landscape to the extent possible. To preserve vegetative screening from public areas, tree removal and vegetation clearing will be minimized along state highways and near recreation sites, and wherever possible along scenic roadways.
AIR QUALITY	
AQ-SOP-1	Western will adhere to all requirements of those agencies having jurisdiction over air quality matters, and any necessary permits for operation and maintenance will be obtained.
AQ-SOP-2	Machinery and vehicles will be kept in good operating condition and older equipment will be replaced with equipment meeting more stringent California emission standards; appropriate emissions-control equipment will be maintained for vehicles and equipment, per California, EPA, and Western air-emission requirements.
AQ-SOP-3	Idle equipment will be shut down when not in active use; visible emissions from stationary generators will be controlled.
AQ-SOP-4	Dust-control measures will be implemented in road construction and maintenance, as needed. Trucks transporting loose material will be covered or maintain at least 2 feet of freeboard and will not create any visible dust emissions.
AQ-SOP-5	There will be no open burning of construction trash.
AQ-SOP-6	Grading activities will cease during periods of high winds (as determined by local air quality management districts).
AQ-SOP-7	Major operations will be avoided on days when the local Air Quality Index is expected to exceed 150.
BIOLOGICAL RESOURCES	
B-SOP-1	All contract crews will complete biological pre-maintenance awareness training to ensure they are familiar with sensitive biological resources and associated SOPs and PCMs. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms. SOPs and applicable PCMs will be written into the contract for O&M work, and contractors will be held responsible for compliance.

SOP	Description
B-SOP-2	Western crews will complete annual awareness training to ensure they are familiar with sensitive biological resources and associated SOPs and PCMs. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms. Further, Western crews will have access to the O&M GIS database in the field to be able to identify sensitive resources and associated PCMs.
B-SOP-3	O&M excavations greater than 3 feet deep will be fenced, covered, or filled at the end of each working day, or have escape ramps provided to prevent the entrapment of wildlife. Trenches and holes will be inspected for entrapped wildlife before being filled. Any entrapped animals will be allowed to escape voluntarily before O&M activities resume, or they may be removed by qualified personnel, with an appropriate handling permit if necessary.
B-SOP-4	Vehicle traffic will be restricted to designated access routes and the immediate vicinity of O&M sites. Vehicle speeds will not exceed 15 mph on access and maintenance roads and 10 mph on unimproved access routes. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas, to the maximum extent feasible.
B-SOP-5	No pets or firearms will be permitted at project sites.
B-SOP-6	At the end of each work day, O&M workers will leave work areas and adjacent habitats to minimize disturbance to actively foraging animals, and remove food-related trash from the work site in closed containers for disposal. Workers will not deliberately or inadvertently feed wildlife.
B-SOP-7	Nighttime O&M activities will be minimized to emergency situations. If nighttime O&M work is required, lights will be directed to the minimum area needed to illuminate project work areas.
B-SOP-8	Where feasible and appropriate, tall dead trees will be topped and left in place as snags or as downed logs to support wildlife dependent on these important features, in coordination with the land owner.
B-SOP-9	Mortalities or injuries to any wildlife that occur as a result of project- or maintenance-related actions will be reported immediately to the Western Natural Resources Department or other designated point of contact, who will instruct O&M personnel on the appropriate action, and who will contact the appropriate agency if the species is listed. The phone number for the Western Natural Resources Department or designated point of contact will be provided to maintenance supervisors and to the appropriate agencies.
B-SOP-10	Caves, mine tunnels, and rock outcrops will never be entered, climbed upon, or otherwise disturbed.
B-SOP-11	If a pesticide label stipulates a buffer zone width for protection of natural resources that differs from that specified in a PCM, the buffer zone width that offers the greatest protection will be applied.

SOP	Description
B-SOP-12	To protect nesting birds (birds not specifically protected by PCMs but protected by the Migratory Bird Treaty Act), whose nests could occur within the ROW, Western and its subcontractors will perform Category B&C O&M activities outside the nesting season, which runs from March 1 through August 15 in the Valley region and from April 1 through September 15 in the Redding/Trinity and Round Mountain/Modoc regions. Alternatively, a qualified biologist will conduct nesting-bird surveys prior to project activities. For special-status birds, see specific PCMs. • An additional survey may be required if gaps between the survey and the project activity exceed three weeks. • Should an active nest be discovered, the qualified biologist will establish an appropriate buffer zone (in which O&M activity is not allowed) to avoid disturbance in the vicinity of the nest. Maintenance activities will not take place until the biologist has determined that the nestlings have fledged or that maintenance activities will not adversely affect adults or newly fledged young. • Alternatively, the qualified biologist will develop a monitoring/mitigation plan that permits the maintenance activity to continue in the vicinity of the nest while monitoring nesting activities to ensure that the nesting birds are not disturbed. At such time when Western finalizes an avian protection plan, Western will adhere to the guidance in that document.
B-SOP-13	Measures described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee 2006) and *Mitigation Bird Collisions with Power Lines: The State the Art in 1994* (Avian Power Line Interaction Committee 1994) will be implemented during O&M activities to minimize bird mortality and injury. At such time when Western finalizes an avian protection plan, Western will adhere to the guidance in that document.
B-SOP-14	At completion of work and at the request of the land owner/manager, all work areas except access roads will be scarified or left in a condition that will facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion.
B-SOP-15	Prior to any application of herbicide, Western will query the California Department of Pesticide Regulation PRESCRIBE database, entering location information by county, township, range, and section, entering both the commercial name and the formulation of the desired pesticide, and will follow all use limitations provided to ensure compliance with applicable pesticide standards. This database is currently located at http://www.cdpr.ca.gov/docs/endspec/prescint.htm. The measures generated by the PRESCRIBE database will supersede those in the PCMs where they are different.
CULTURAL RESOURCES	
C-SOP-1	All contract crews will complete cultural resources pre-maintenance awareness training to ensure they are aware of the locations of cultural resource sites; maintenance methods to be used in areas with sensitive cultural resources; and restrictions required in cultural resources areas (i.e., SOPs and PCMs). Crews will be educated on the Archaeological Resources Protection Act, which makes it a federal offense to willfully damage or remove any artifacts or materials from an archaeological site. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms. SOPs and applicable PCMs will be written into the contract for O&M work, and contractors will be held responsible for compliance.

SOP	Description
C-SOP-2	Western crews will complete annual awareness training to ensure they are familiar with sensitive cultural resources and associated SOPs and PCMs. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms. Further, Western crews will have access to the O&M GIS database in the field to be able to identify sensitive resources and associated PCMs.
C-SOP-3	Operation of vehicles or heavy construction equipment will be avoided in areas that are not designated transmission line and legal access road ROWs or other established transportation routes. This measure will minimize the possibility of disturbing unmapped cultural resources.
C-SOP-4	Upon discovery of potential buried cultural materials, work within 50 feet of the find will be halted and the discovery will be reported immediately to the Western Natural Resources Department or other designated point of contact. Western will comply with provisions in the National Historic Preservation Act and consult with the California State Historic Preservation Officer and appropriate tribes to determine measures to avoid the resource or mitigate during maintenance activities.
GEOLOGY AND SOILS	
GS-SOP-1	Should Western need to modify or relocate a structure, Western will have a certified professional geotechnical engineer evaluate the potential for geotechnical hazards and unstable slopes.
GS-SOP-2	Upon completing ground-disturbing work, all work areas will be left in a condition that facilitates natural and appropriate vegetation regrowth, provides for proper drainage, and prevents erosion.
GS-SOP-3	All O&M activities must be in conformance with Western's Integrated Vegetation Management Environmental Guidance Manual and Erosion Control and Revegetation Plan.
GS-SOP-4	Wet areas will be avoided to the extent practicable and all activity will be minimized during winter and other wet periods to prevent damage (e.g., rutting, erosion, soil compaction). If wet areas cannot be avoided, Western will use wide-track or balloon tire vehicles and equipment or timber mats.
GS-SOP-5	All excavated soil will be backfilled and tamped at the location of excavation and used to provide positive drainage, or will be hauled off site to an area appropriate for disposal of excavated material, in accordance with federal, state, and local regulations and in coordination with the land owner.
GS-SOP-6	Use of ground-disturbing mechanical equipment to remove vegetation will be avoided on continuous slopes over 35 percent, unless the threat of erosion is minimal because of bedrock, or reseeding will be performed. Short distances on slopes up to 40 percent will be allowable.
GS-SOP-7	Where soil has been severely disturbed and the establishment of vegetation will be needed to minimize erosion, appropriate measures, as approved by the federal land manager, will be implemented to establish an adequate cover of native grass or other native vegetation as needed. All mulch and seed will be of high purity to prevent the spread of noxious weeds. Soil preparation, seeding, mulching, and fertilizing will be repeated as necessary to insure soil stabilization and revegetation acceptable to the federal land manager.
GS-SOP-8	Disturbance and removal of soils and vegetation will be limited to the minimum area necessary for access and O&M activities. Grading will be minimized to the extent possible. When required, grading will be conducted such that run-off waters flow predominantly away from watercourses/washes to reduce the potential for material to enter the watercourse/wash.

SOP	Description
LAND USE	
LU-SOP-1	Any damage (e.g., to fences and gates) during maintenance activities will be repaired or replaced, and restored to their preconstruction condition.
LU-SOP-2	Western will notify affected land owners for vegetation management and encroachment activities, as appropriate. Western will post proper signage in areas requiring temporary closure or limited access due to O&M activities.
LU-SOP-3	The spread of noxious weeds will be minimized. Western will clean seeds from ground-disturbing equipment before entering cropland or forestland, or moving between these subject areas.
NOISE	
NOISE-SOP-1	All vehicles and equipment will be equipped with required exhaust-noise-abatement devices.
NOISE-SOP-2	For long-term O&M activities confined to a specific area, Western's Natural Resources Department will be contacted to evaluate local thresholds and all requirements of those agencies having jurisdiction over noise matters.
PUBLIC HEALTH	
PH-SOP-1	For identified locations, structures and/or shield wire will be marked with highly visible devices (e.g., lights and marker balls) where required by governmental agencies (e.g., Federal Aviation Administration) with jurisdiction.
PH-SOP-2	Signs and/or flags will be erected in areas of public access to indicate maintenance activities are taking place; workers will be conspicuous by wearing high-visibility vests and hardhats.
PH-SOP-3	O&M excavations greater than 3 feet deep will be fenced, covered, or filled at the end of each working day, or have escape ramps provided to prevent injury of the public and workers.
PH-SOP-4	With regard to herbicide use: • All herbicide applicators will have received training and be licensed in appropriate application categories. • Herbicide-free buffer zones will be maintained per label instructions. • All herbicide label and material safety data sheet instructions will be followed regarding mixing and application standards and equipment-cleaning standards to reduce potential exposure to the public through drift and misapplication. • Western will ensure that areas treated with herbicides will be posted and re-entry intervals specified and enforced in accordance with label instructions. Herbicides and equipment will never be left unattended in areas with unrestricted access. • Climate, geology, and soil types will be considered (including rainfall, wind, depth of aquifer, and soil permeability) in selecting the herbicide with lowest relative risk of migrating to water resources. • There will be no aerial application of herbicides. • All herbicide spill requirements will be followed in the rare case of an herbicide spill, including containment, cleanup, and notification procedures.

SOP	Description
PH-SOP-5	With regard to hazardous materials: • Hazardous materials will not be drained onto the ground, into streams, or into drainage areas. • Any release, threat of release, or discharge of hazardous materials within the project area in connection with project activities will be cleaned up and/or remediated, in accordance with applicable federal, state, and local regulations. • All construction waste, including trash and litter, other solid waste, petroleum products, and other potentially hazardous material will be removed in accordance with applicable federal, state, and local regulations. • Discovery of, or the accidental discharge of, a significant amount of hazardous materials will be immediately reported to Western's dispatch and Natural Resources Department. • There will be no storage of hazardous materials in the project area without approval from the authorized officer. • Upon termination of the permit, a report will be submitted to determine whether there had been site contamination and if so, that the remediation met compliance with applicable laws.
PH-SOP-6	All contract crews will complete hazardous materials pre-maintenance awareness training to ensure they are aware of SOPs and PCMs, as wells as pertinent regulations and the consequences for non-compliance. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms. SOPs and applicable PCMs will be written into the contract for O&M work, and contractors will be held responsible for compliance.
PH-SOP-7	Contractors must submit a spill response plan that is approved by Western. Clean-up actions and costs resulting from contractor misconduct will be the responsibility of the contractor and approved by Western's Natural Resources Department.
PH-SOP-8	Western crews will complete annual awareness training to ensure they are familiar with SOPs and PCMs related to hazardous materials. All supervisors and field personnel will have on file a signed agreement that they have completed the training, and understood and agreed to the terms.
PH-SOP-9	All flammable vegetation will be removed a minimum of 30 feet from tower center and conductors or as required by federal requirements, and to ensure access to towers.
PH-SOP-10	Western and its contractors will comply with all applicable federal and state regulations regarding fire suppression, including but not limited to having all equipment be equipped with a shovel, water pump, and fire extinguisher, the use of spark arrestors on all internal and external combustion engines, verification of daily fire levels during fire season, and a minimum of a 300-gallon water tank with a minimum of 250 feet of hose.
RECREATION	
REC-SOP-1	Western will direct members of the public to alternate trails or recreation areas if blocked by machinery or for safety purposes.
TRANSPORTATION	
TRANS-SOP-1	All lane closures or obstructions on major roadways associated with maintenance activities will be restricted to off-peak periods to minimize traffic congestion and delays, and will be coordinated with appropriate authorities (e.g., Caltrans).

SOP	Description
WATER RESOURCES	
WR-SOP-1	Non-biodegradable debris will not be deposited in the ROW.
WR-SOP-2	Should Western need to relocate a structure or access road affecting waters of the United States or waters of the state, Western will consult with TANC and, as appropriate, the U.S. Army Corps of Engineers (USACE) and the California State Water Resources Control Board (SWRCB). Bridges will be used at new stream crossings wherever possible. Any discharge of material (displaced soils and, in certain circumstances, vegetation debris) within waters of the United States will be subject to USACE regulations under the Clean Water Act, and could require a permit. Western Natural Resources Department will be contacted. Any discharge of material (displaced soils and, in certain circumstances, vegetation debris) within waters of the state will be subject to SWRCB regulations under the Porter-Cologne Water Quality Control Act and applicable Clean Water Act regulations as administered on behalf of the United States by the SWRCB.
WR-SOP-3	Sediment-control devices, such as placement of native rock, will be used at all dry wash crossings.
WR-SOP-4	Run-off from the maintenance site will be controlled and will meet the State Water Resources Control Board storm water requirements in the Storm Water Pollution Prevention Plan.
WR-SOP-5	Run-off control structures, diversion ditches, erosion-control structures, and energy dissipaters will be cleaned, maintained, repaired, and replaced to meet the standards set by applicable permits and the Storm Water Pollution Prevention Plan, or where such a plan is inapplicable, similar standards set by Western or the applicable federal land manager.
WR-SOP-6	All contaminated discharge water created by O&M activities (e.g., concrete washout, pumping for work-area isolation, vehicle wash water, drilling fluids) will be contained and disposed of in accordance with applicable federal, state, and local regulations.
WR-SOP-7	Vehicles will be inspected daily for fluid leaks before leaving the staging area.
WR-SOP-8	Impacts to areas under the jurisdiction of the USACE and SWRCB shall be avoided to the extent feasible. Where avoidance of jurisdictional areas is not feasible and the action is not covered under nationwide permits and/or western's programmatic 401 permit, Western would obtain 404/401 permits applicable to the action. Western would perform an impact assessment for the O&M activity, which would identify and quantify the acreage of each jurisdictional area (wetland, riparian, etc.). Western would provide creation, restoration, or preservation mitigation consistent with the 404/401 permitting requirements. The mitigation shall be implemented prior to or concurrent with the action, would be in-kind habitat, would include the appropriate buffers to protect the functions and values of the jurisdictional mitigation area, and is anticipated would be in close proximity to the impact or in the same watershed (Valley) or Resource Conservation District (Redding/Trinity) or Resource Conservation and Development agency (Round Mountain/Modoc). The mitigation ratio would be determined during the permit process, but within a range of 1:1 to 4:1, depending on the sensitivity of the habitat and other factors. If required, annual reporting to USACE and/or SWRCB would provide a complete accounting of impacts and mitigation.

Note: Prior to commencement of O&M activities, all personnel will be trained on the implementation of SOPs. Western will ensure that certified personnel (e.g. certified professional in erosion and sediment control, certified professional in storm water quality) are available for review of proper implementation of SOPs.

6. PROJECT CONSERVATION MEASURES (PCMs)

6.1 Development of PCMs

Western has completed extensive biological and cultural resource surveys along the North Area facilities, communication sites, transmission line ROWs, and documented access roads. These detailed surveys inventoried all biological habitat types, assessed the potential for sensitive species occurrence, and inventoried all cultural resources along Western's ROWs and documented access roads. All of this site-specific resource information has been included in Western's GIS as baseline for resource management during O&M activities. See section 7 for details on Western's GIS database.

Western identified the different types of O&M activities that may occur along the ROW and documented legal access roads. These maintenance activities were grouped into three categories based on the level of potential adverse effects: Category A (inspection and minor maintenance activities), Category B (routine maintenance activities), and Category C (new infrastructure). See section 3.4 for a detailed description of the O&M categories.

Based on the occurrence or potential for occurrence of sensitive resources, as well as the projected O&M activities that may occur, Western developed PCMs to proactively protect the sensitive resources during O&M activities. Each sensitive resource has an associated PCM for each O&M category (A, B, and C). PCMs are listed in Table 6-1 (Special-status Plant PCMs), Table 6-2 (Special-status Wildlife and Fish PCMs), Table 6-3 (Water Resources/Aquatic Habitat PCMs), and Table 6-4 (Cultural Resource PCMs). PCMs protecting water resources and aquatic habitats will also protect fish, wildlife, and plants found in these habitats.

In accordance with the special-status species matrix below, federally and state-listed species will be protected on the COTP ROW on private land.

	Western ROW (PACI, CVP)	COTP ROW
BLM	• Federally listed species • State-listed species • BLM-sensitive species	• Federally listed species • State-listed species • BLM-sensitive species
NPS	• Federally listed species • NPS species	• Not applicable
USFS	• Federally listed species • State-listed species • USFS-sensitive species	• Federally listed species • State-listed species • USFS-sensitive species
Private	• Federally listed species • State-listed species	• Federally listed species • State-listed species

6.2 Implementation of PCMs

Prior to a particular O&M activity, Western will utilize the GIS database to identify the sensitive resources within the proposed O&M activity area. Based on the sensitive resources that are identified, GIS database will display the associated PCM numbers identified for the proposed work area. The PCM number will be used to reference the PCM text in Table 6-1 through 6-4. Each PCM number has text describing the requirements associated with each O&M maintenance category (A, B, C). Generally, the PCM requirements for maintenance Category C (new infrastructure) are more stringent than those of Category A (inspection and minor maintenance activities).

Western will ensure that all maintenance crews (and maintenance contractors) understand each particular PCM identified in the work area. Compliance with all applicable PCMs will be included in the contract of each maintenance contractor.

6.3 Changes to PCMs

Should Western want to change a PCM for a particular resource, Western will contact TANC and the appropriate resource agencies in writing and discuss the proposed changes to the PCM. The revised PCM will likely be similar in magnitude and extent as the original PCM. Should a resource no longer require protection (e.g., delisted species) by U.S. Fish and Wildlife Service, State Historic Preservation Office, or other appropriate agency, Western will document the removal of the resource in a formal memo to the appropriate resource agency with written confirmation to TANC, and then remove the resource from Western's GIS database.

Western will update the GIS data when new resources require protection (e.g., newly listed species). Additionally, Western will review the GIS data at least once a year to verify that all resources are accurate. New resources may require new PCMs, depending on the resource and the O&M activity. Western will coordinate with TANC and appropriate resource agencies in developing new PCMs for newly listed resources. New PCMs for newly listed resources will not become effective until jointly approved in writing by TANC and Western.

Table 6-1 Special-status Plant Project Conservation Measures

PCM-ID	Species Name	Status	Activity Category	PCM
UPLAND SPECIES				
PCM-B001	*Allium sanbornii* var. *sanbornii* Sanborn's onion	CNPS List 4/ NPS	A	Follow SOPs.
			B	From May 1 to September 30, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between May 1 and September 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the marked area, 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times in the vicinity of this species with the exception of direct application to target vegetation. All work will be hauled off site. Ground disturbing activities require a survey by a qualified biologist to mark existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by NPS. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B002	*Amsinckia grandiflora* Large-flowered fiddleneck	FE/SE/1B.1	A	Follow SOPs.
			B	From April 1 to May 31, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between April 1 and May 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the marked area, 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities between April 1 and May 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance during this time frame will be prohibited within the flagged boundary unless otherwise directed by all appropriate resource agencies. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants. If ground disturbance is required within a plant population, it must be completed after the plant has set seed (after May 31) and the top 4 inches of topsoil will be stockpiled separately during excavations. When this topsoil is replaced, compaction will be minimized to the extent consistent with utility standards. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B003	*Arctostaphylos mallori* Mallory's manzanita	CNPS List 4/ NPS	A	Follow SOPs.
			B	Vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. A qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by NPS. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B004	*Arnica venosa* Shasta County arnica	CNPS List 4/NPS	A	Follow SOPs.
			B and C	Follow PCM-W002. If vegetation-management activities are proposed between May 1 and July 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within flagged boundary unless otherwise directed by NPS.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B005	*Calystegia atriplicifolia* ssp. *buttensis* Butte County morning-glory	CNPS List 1B.2/BLMS/FSS	A	Follow SOPs
			B	From May 1 to July 31, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between May 1 and July 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities proposed between May 1 and July 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM and/or USFS. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B006	*Castilleja rubicundula* ssp. *rubicundula* Pink creamsacs	CNPS List 1B.2/BLMS	A	Follow SOPs.
			B	From April1 to June 30, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between April 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities proposed between April 1 and June 30 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B007	*Chamaesyce ocellata* ssp. *rattanii* Stony Creek spurge	CNPS List 1B.2/BLMS	A	Follow SOPs.
			B	From May 1 to October 31, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between May 1 and October 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities proposed between May 1 and October 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B008	*Clarkia borealis* ssp. *arida* Arid northern clarkia	CNPS List 1B.1/BLMS	A	Follow SOPs.
			B	From June 1 to August 31, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation management activities are proposed between June 1 and August 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities proposed between June 1 and August 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B009	*Cordylanthus palmatus* Palmate-bracted bird's beak	FE/SE/1B.2	A	Follow SOPs.
			B	From May 1 to October 31, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between May 1 and October 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities proposed between May 1 and October 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance during this time frame will be prohibited within the flagged boundary unless otherwise directed by all appropriate resource agencies. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants. If ground disturbance is required within a plant population, it must be completed after the plant has set seed (after May 31) and the top 4 inches of topsoil will be stockpiled separately during excavations. When this topsoil is replaced, compaction will be minimized to the extent consistent with utility standards. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B010	*Cypripedium fasciculatum* Clustered lady's slipper	CNPS List 4/NPS/BLMS/ FSS	A	Follow SOPs and PCM-W002 (in aquatic habitat).
			B	Follow all measures listed for A. From June 1 to August 31, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between June 1 and August 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by NPS and/or BLM and/or USFS. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B011	*Eschscholzia rhombipetala* Diamond-petaled California poppy	CNPS List 1B.1/BLMS	A	Follow SOPs.
			B	From March 1 to April 30, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between March 1 and April 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities proposed between March 1 and April 30 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B012	*Fritillaria pluriflora* Adobe lily	CNPS List 1B.2/BLMS	A	Follow SOPs.
			B	From February 1 to April 30, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between February 1 and April 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-013	*Iliamna bakeri* Baker's globe mallow	CNPS List 4.2/BLMS/FSS	A	Follow SOPs.
			B	From June 1 to September 30, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between June 1 and September 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM and/or USFS. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B014	*Lasthenia conjugens* Contra Costa goldfields	FE/CNPS List 1B.1	A	Follow SOPs.
			B	From March 1 to June 30, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation management activities are proposed between March 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities proposed between March 1 and June 30 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance during this time frame will be prohibited within the flagged boundary unless otherwise directed by all appropriate resource agencies All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants. If ground disturbance is required within a plant population, it must be completed after the plant has set seed (after June 30) and the top 4 inches of topsoil will be stockpiled separately during excavations. When this topsoil is replaced, compaction will be minimized to the extent consistent with utility standards. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B015	*Neviusia cliftonii* Shasta snow-wreath	CNPS List 1B.2/BLMS/FSS	A	Follow SOPs.
			B	Vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. A qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM and/or USFS. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B016	*Pseudobahia bahiifolia* Hartweg's golden sunburst	FE/SE/ CNPS List 1B.1	A	Follow SOPs/
			B	From March 1 to May 31, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between March 1 and May 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities proposed between March 1 and May 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by all appropriate resource agencies. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants. If ground disturbance is required within a plant population, it must be completed after the plant has set seed (after May 31) and the top 4 inches of topsoil will be stockpiled separately during excavations. When this topsoil is replaced, compaction will be minimized to the extent consistent with utility standards. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B017	*Sedum paradisum* Canyon Creek stonecrop	CNPS List 1B.2/NPS/ BLMS/FSS	A	Follow SOPs.
			B	If vegetation-management activities are proposed between May 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B018	*Sidalcea robusta* Butte County checkerbloom	BLMS	A	Follow SOPs.
			B	From April 1 to June 30 vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between April 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B018 (cont.)	*Sidalcea robusta* Butte County checkerbloom	BLMS	C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B019	*Triteleia crocea* var. *crocea* Yellow triteleia	CNPS List 4/ NPS	A	Follow SOPs.
			B	From May 1 to June 30, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between May 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the marked area, 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. All work will be hauled off site. Ground-disturbing activities require a survey by a qualified biologist to mark existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by NPS. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
VERNAL POOLS, VERNAL POOL GRASSLANDS, AND SEASONAL WETLANDS				
PCM-B020	*Calochortus longebarbatus* var. *longebarbatus* Long-haired star tulip	CNPS List 1B.2/BLMS/FSS	A	Follow SOPs, PCM-W001, and PCM-W002 (in appropriate habitat).
			B	Follow all measures listed for A. From May 1 to June 30, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between May 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the marked area, 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. All work will be hauled off site. Ground disturbing activities require a survey by a qualified biologist to mark existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by NPS. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B021	*Chamaesyce hooveri* Hoover's spurge	FT/CNPS List 1B.1	A and B	Follow SOPs and PCM-W001. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
PCM-B021 (cont.)	*Chamaesyce hooveri* Hoover's spurge (cont.)	FT/CNPS List 1B.1 (cont.)	C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B021a			A, B, and C	Critical Habitat: Follow SOPs, PCM-W001a, and PCM-B021.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B022	*Gratiola heterosepala* Boggs Lake hedge-hyssop	SE/ CNPS List 1B.1	A and B	Follow SOPs, PCM-W001, and PCM-W002. Where impacts to listed plants cannot be avoided, the top 4 inches of topsoil will be stockpiled separately during excavations. When this topsoil is replaced, compaction will be minimized to the extent consistent with utility standards.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B023	*Juncus leiospermus* var. *ahartii* Ahart's dwarf rush	CNPS List 1B.1	A and B	Follow SOPs and PCM-W001.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B024	*Juncus leiospermus* var. *leiospermus* Red Bluff dwarf rush	CNPS List 1B.1/BLMS/FSS	A and B	Follow SOPs and PCM-W001.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B025	*Limnanthes floccosa* ssp. *californica* Butte County meadowfoam	FE/SE/ CNPS List 1B.1	A and B	Follow SOPs, PCM-W001, and PCM-W002. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B025a			A, B, and C	Critical Habitat: Follow PCM-W001a and PCM-B025.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B026	*Paronychia ahartii* Ahart's paronychia	CNPS List 1B.1/BLMS	A	Follow SOPs and PCM-W001 (in appropriate habitat).
			B	Follow all measures listed for A From March 1 to June 30, vehicle access will be permitted only on well-established roads until the site has been cleared by a qualified biologist. All vehicles will have rubber tires. Off-road travel will be avoided to the extent possible. If vegetation-management activities are proposed between March 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Herbicide use will be prohibited at all times with the exception of direct application to target vegetation. Ground-disturbing activities proposed between March 1 and June 30 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM. All work will be hauled off site. Standard erosion- and sediment-control measures will be installed for all ground-disturbing activities in compliance with best management practices adopted by Western to prevent impacts to plants.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B027	*Navarretia heterandra* Tehama navarretia	CNPS List 4/NPS	A and B	Follow SOPs and PCM-W001.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B028	*Neostapfia colusana* Colusa grass	FT/SE/ CNPS List 1B.1	A and B	Follow SOPs and PCM-W001. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B029	*Oenothera deltoides* ssp. *howellii* Antioch Dunes evening primrose	FE/SE/CNPS List 1B.1	A	Follow SOPs
			B	If vegetation-management activities are proposed between March 1 and September 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by USFS or BLM.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B030	*Orcuttia pilosa* Hairy Orcutt grass	FE/SE/ CNPS List 1B.1	A and B	Follow SOPs and PCM-W001. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B030a			A, B, and C	Critical Habitat: Follow PCM-W001a and PCM-B030
PCM-B031	*Orcuttia tenuis* Slender Orcutt grass	FT/SE/ CNPS List 1B.1/FSS	A and B	Follow SOPs and PCM-W001. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B031a			A, B, and C	Critical Habitat: Follow PCM-W001a and PCM-B031.
PCM-B032	*Tuctoria greenii* Greene's tuctoria	FE/SR/ CNPS List 1B.1	A and B	Follow SOPs and PCM-W001. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B032a			A, B, and C	Critical Habitat: Follow PCM-W001a, and PCM-B032.
PCM-B033	*Tuctoria mucronata* Solano grass	FE/SE/ CNPS List 1B.1	A and B	Follow SOPs and PCM-W001. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
SEEP, SPRING, POND, LAKE, CREEK, MARSH SPECIES				
PCM-B034	*Astragalus tener* var. *ferrisiae* Ferris's milkvetch	CNPS List 1B.1/BLMS	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. If vegetation-management activities are proposed between April 1 and May 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) and the perimeter of the spring or wet meadow prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground-disturbing activities proposed between April 1 and May 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B035	*Carex vulpinoidea* Fox sedge	CNPS List 2.2/NPS	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. If vegetation-management activities are proposed between May 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by NPS.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B036	*Cryptantha crinita* Silky cryptantha	CNPS List 1B.2/BLMS	A	Follow SOPs, PCM-W002, and PCM-W001.
			B	Follow PCM-W002. If vegetation-management activities are proposed between April 1 and May 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) and the perimeter of the spring or wet meadow prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground-disturbing activities proposed between April 1 and May 31 require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B037	*Eryngium racemosum* Delta button celery	SE/CNPS List 1B.1	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. If vegetation-management activities are proposed between June 1 and September 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) and the perimeter of the spring or wet meadow prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by Western after discussion with CDFG.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B038	*Lilaeopsis masonii* Mason's lilaeopsis	SR/CNPS List 1B.1	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. If vegetation-management activities are proposed between April 1 and November 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by Western after discussion with CDFG.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B039	*Puccinellia howellii* Howell's alkali grass	CNPS List 1B.1/BLMS/NPS	A	Follow SOPs and PCM-W002.
			B and C	Follow PCM-W002. If vegetation-management activities are proposed between April 1 and June 30, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by BLM and/or NPS.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.
PCM-B040	*Smilax jamesii* English Peak greenbriar	1B.3/FSS/BLMS	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. If vegetation-management activities are proposed between May 1 and July 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by USFS or BLM.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status	Activity Category	PCM
PCM-B041	*Trillium ovatum* ssp. *oettingeri* Salmon Mountains wakerobin	CNPS List 4.2/NPS	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. If vegetation-management activities are proposed between May 31 and July 31, a qualified biologist will mark plant populations (including a 50-foot buffer zone) prior to O&M activity. Within 100 feet of the marked area, the following work area limits will be provided: 1) only manual clearing of vegetation will be allowed within 50 feet of the edge of the flagged area, and 2) mechanical treatment of all kinds (including mowers, tractors, chippers, dozers) will be prohibited. Ground-disturbing activities require a survey by a qualified biologist to flag existing plant populations or clear the site. Ground disturbance will be prohibited within the flagged boundary unless otherwise directed by NPS.
			C	Follow all measures listed for A and B. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

- Annual herbs have limited operating periods (LOPs) for off-road travel, vegetation management, and ground disturbance that correspond to the life history of the plant (e.g., when the plant sets seed and/or is non-vegetative).
- In general, perennial herbs have LOPs for off-road travel and vegetation management that correspond to the life history of the plant (e.g., when the plant sets seed and/or is non-vegetative).
- Ground disturbance in suitable habitat for perennials requires a survey due to the presence of underground plant parts (e.g., roots, bulbs).
- There are no LOPs for shrubs because there is not a non-vegetative period.
- Herbicide use will be prohibited at all times (with the exception of direct application to target vegetation) in areas that could support special-status plants. Western will refer to the PRESCRIBE database for specific measures regarding herbicide application.

Table 6-2 Special-status Wildlife and Fish Project Conservation Measures

PCM-ID	Species Name	Status[1]	Activity Category	PCM
INVERTEBRATES				
PCM-B042	Conservancy fairy shrimp *Branchinecta conservatio*	FE	A, B, and C	Follow SOPs and PCM-W001. If conservancy fairy shrimp habitat cannot be avoided, the following will be implemented. Protocol-level preconstruction surveys will be required or species presence will be assumed. If conservancy fairy shrimp are present or assumed present, Western will initiate formal consultation with FWS. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
PCM-B042a			A, B, and C	Critical habitat: Follow PCM-B042. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
PCM-B043	Delta green ground beetle *Elaphrus viridis*	FT	A, B, and C	Follow SOPs and PCM-W001. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
PCM-B043a			A, B, and C	Critical habitat: Follow PCM-B043. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
PCM-B044	Longhorn fairy shrimp *Branchinecta lynchi*	FE	A, B, and C	Follow SOPs and PCM-W001. If longhorn fairy shrimp habitat cannot be avoided, the following will be implemented. Protocol-level preconstruction surveys will be required or species presence will be assumed. If longhorn fairy shrimp are present or assumed present, Western will initiate formal consultation with FWS. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B045	Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	A	Follow SOPs at all times and PCM-W002 for elderberries in riparian habitat.
			B	Prior to initiating vegetation clearance in the Central Valley below 3,000 feet with elderberry plants present, qualified personnel[2] will clearly flag or fence each elderberry plant that has a stem measuring one inch or greater in diameter at ground level. If an elderberry plant meeting this criterion is present: A minimum buffer zone of 20 feet outside of the dripline of each elderberry plant will be provided during all routine O&M activities, within which only manual methods for vegetation clearing will be allowed. No insecticides, herbicides, fertilizers, or other chemicals will be used within 100 feet of an elderberry plant, except direct application to target vegetation (e.g. injection or cut-stump.)Trimming, rather than removal of shrubs, will be used where feasible. Directional felling of trees and manual cutting of trees prior to removal will be used to minimize impacts to elderberries. Replacement of existing conductor or installation of additional lines will be performed by pulling the line from tower to tower without touching the vegetation in areas where elderberry plants are present. If elderberry plants meeting the size criterion cannot be avoided, Western would refer back to its 2005 BO (USFWS File # 1-1-03-F-0107) in which the take of 10 elderberry shrubs per year for 10 years was addressed and authorized for the counties of Sacramento, Sutter, and Placer. Western is not requesting additional take of the Valley elderberry longhorn beetle, but would like to expand the area where take is allowed to include the North Area ROW Maintenance Project area. Take within this expanded area was previously addressed in Western's 1998 BA (USFWS File # 1-1-97-F-140). Additionally, the 10 take per year for 10 years (started in 2007) is already mitigated for in Western's 27-acre mitigation site in River Bend Park (formerly Goethe Park) in the American River Parkway. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency, as necessary.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B046	Vernal pool fairy shrimp *Branchinecta lynchi*	FT	A, B, and C	Follow SOPs and PCM-W001. If vernal pool fairy shrimp habitat cannot be avoided, the following will be implemented. Protocol-level preconstruction surveys will be required or species presence will be assumed. If vernal pool fairy shrimp are present or assumed present, Western will initiate formal consultation with FWS. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
PCM-B046a			A, B, and C	Critical habitat: Follow PCM-B046. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
PCM-B047	Vernal pool tadpole shrimp *Lepidurus packardi*	FE	A, B, and C	Follow PCM-W001. If vernal pool tadpole shrimp habitat cannot be avoided, the following will be implemented. Protocol-level preconstruction surveys will be required or species presence will be assumed. If vernal pool tadpole shrimp are present or assumed present, Western will initiate formal consultation with FWS. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
PCM-B047a			A, B, and C	Critical habitat: Follow PCM-B047. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
FISHES				
PCM-B048	Central Valley fall/late fall-run chinook salmon *Oncorhynchus tshawytscha*	SSC/FSS	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. To comply with the salmon injunction for herbicide applications, Western will ensure that there will be no ground application of any of the chemicals named in the injunction (http://www.cdpr.ca.gov/docs/endspec/salmonid.htm). Currently, the no-use buffer is 60 feet from any salmonid-supporting waters. In-water or near-shore work within the five sub-areas located within the North Area ROW will be performed within the date ranges below, unless otherwise authorized by NMFS: • The Delta: Any of the waterways in the action area that are south and west of the City of Sacramento. June 1 and October 15 of any given year. • The Mainstem Sacramento River - South: The waters of the Sacramento River from the City of Sacramento north to Hamilton City. June 1 and October 15 of any given year. • The Mainstem Sacramento River - North: The waters of the Sacramento River from Hamilton City north to Keswick Dam. December 1 and April 1 of any given year. • Butte, Mill, Deer, and Battle Creeks: Any of the waters that comprise the forks or mainstems of these four named creeks. December 1 and April 1 of any given year. • The North State Tributary Area: Any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks, as described above. June 1 and October 15 of any given year. Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodable, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time, and pump intakes will be screened to meet NMFS criteria.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B049	Central Valley spring-run chinook salmon *Oncorhynchus tshawytscha*	FT/ST/FSS	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. To comply with the salmon injunction for herbicide applications, Western will ensure that there will be no ground application of any of the chemicals named in the injunction (http://www.cdpr.ca.gov/docs/endspec/salmonid.htm). Currently, the no-use buffer is 60 feet from any salmonid-supporting waters. In-water or near-shore work within the five sub-areas located within the North Area ROW will be performed within the date ranges below, unless otherwise authorized by NMFS: • The Delta: Any of the waterways in the action area that are south and west of the City of Sacramento. June 1 and October 15 of any given year. • The Mainstem Sacramento River - South: The waters of the Sacramento River from the City of Sacramento north to Hamilton City. June 1 and October 15 of any given year. • The Mainstem Sacramento River - North: The waters of the Sacramento River from Hamilton City north to Keswick Dam. December 1 and April 1 of any given year. • Butte, Mill, Deer, and Battle Creeks: Any of the waters that comprise the forks or mainstems of these four named creeks. December 1 and April 1 of any given year. • The North State Tributary Area: Any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks, as described above. June 1 and October 15 of any given year.. Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodable, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time, and pump intakes will be screened to meet NMFS criteria. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of NMFS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B049a	Central Valley spring-run chinook salmon *Oncorhynchus tshawytscha* (cont.)	FT/ST/FSS	A, B, and C	Critical habitat: Follow PCM-B049. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of NMFS reporting requirements.
PCM-B050	Central Valley steelhead *Oncorhynchus mykiss*	FT	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. To comply with the salmon injunction for herbicide applications, Western will ensure that there will be no ground application of any of the chemicals named in the injunction (http://www.cdpr.ca.gov/docs/endspec/salmonid.htm). Currently, the no-use buffer is 60 feet from any salmonid-supporting waters. In-water or near-shore work within the five sub-areas located within the North Area ROW will be performed within the date ranges below, unless otherwise authorized by NMFS: • The Delta: Any of the waterways in the action area that are south and west of the City of Sacramento. June 1 and October 15 of any given year. • The Mainstem Sacramento River - South: The waters of the Sacramento River from the City of Sacramento north to Hamilton City. June 1 and October 15 of any given year. • The Mainstem Sacramento River - North: The waters of the Sacramento River from Hamilton City north to Keswick Dam. December 1 and April 1 of any given year. • Butte, Mill, Deer, and Battle Creeks: Any of the waters that comprise the forks or mainstems of these four named creeks. December 1 and April 1 of any given year. • The North State Tributary Area: Any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks, as described above. June 1 and October 15 of any given year. Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodable, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time, and pump intakes will be screened to meet NMFS criteria. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of NMFS reporting requirements.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B050 (cont.)	Central Valley steelhead *Oncorhynchus mykiss*	FT	C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
PCM-B050a			A, B, and C	Critical habitat: Follow PCM-B050. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of NMFS reporting requirements.
PCM-B051	Delta smelt *Hypomesus transpacificus*	FT/ST	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. In-water or near-shore work within the five sub-areas located within the North Area ROW will be preformed within the date ranges below, unless otherwise authorized by NMFS: Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodable, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time, and pump intakes will adhere to the NMFS and CDFG screen criteria (http://swr.ucsd.edu/hcd/fishscrn.htm and http://iep.water.ca.gov/cvffrt/DFGCriteria2.htm) or more recent guidance. All instream work will adhere to an approach velocity of 0.2 feet/second during pumping. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
PCM-B051a			A, B, and C	Critical habitat: Follow PCM B051. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B052	Green sturgeon *Acipenser medirostris*	FT/SSC	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. In-water or near-shore work within the five sub-areas located within the North Area ROW will be preformed within the date ranges below, unless otherwise authorized by NMFS: • The Delta: Any of the waterways in the action area that are south and west of the City of Sacramento. June 1 and October 15 of any given year. • The Mainstem Sacramento River - South: The waters of the Sacramento River from the City of Sacramento north to Hamilton City. June 1 and October 15 of any given year. • The Mainstem Sacramento River - North: The waters of the Sacramento River from Hamilton City north to Keswick Dam. December 1 and April 1 of any given year. • Butte, Mill, Deer, and Battle Creeks: Any of the waters that comprise the forks or mainstems of these four named creeks. December 1 and April 1 of any given year. • The North State Tributary Area: Any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks, as described above. June 1 and October 15 of any given year. Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodable, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time, and pump intakes will be screened to meet NMFS criteria. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of NMFS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B053	Hardhead *Mylopharodon conocephalus*	FSS	A	Follow SOPs and PCM-W002.
			B and C	Follow PCM-W002. Because of potential range overlap with listed salmonids, In-water or near-shore work within the five sub-areas located within the North Area ROW will be preformed within the date ranges below, unless otherwise authorized by USFS: • The Delta: Any of the waterways in the action area that are south and west of the City of Sacramento. June 1 and October 15 of any given year. • The Mainstem Sacramento River - South: The waters of the Sacramento River from the City of Sacramento north to Hamilton City. June 1 and October 15 of any given year. • The Mainstem Sacramento River - North: The waters of the Sacramento River from Hamilton City north to Keswick Dam. December 1 and April 1 of any given year. • Butte, Mill, Deer, and Battle Creeks: Any of the waters that comprise the forks or mainstems of these four named creeks. December 1 and April 1 of any given year. • The North State Tributary Area: Any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks, as described above. June 1 and October 15 of any given year. Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodable, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B054	Lost River sucker *Deltistes luxatus*	FE/SE	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002 for instream work within or near habitat for the Lost River sucker, including irrigation canals operated by the Tule Lake Irrigation District. Because of potential range overlap with listed salmonids, in-water or near-shore work will only occur between June 1 and October 15 within the North State Tributary Area (any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks), unless otherwise authorized by USFWS. Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodable, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
PCM-B055	Rough sculpin *Cottus asperrimus*	ST	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. Because of potential range overlap with listed salmonids, in-water or near-shore work will only occur between June 1 and October 15 within the North State Tributary Area (any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks). Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodable, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B056	Sacramento River winter-run chinook salmon *Oncorhynchus tshawytscha*	FE/SE	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. To comply with the salmon injunction for herbicide applications, Western will ensure that there will be no ground application of any of the chemicals named in the injunction (http://www.cdpr.ca.gov/docs/endspec/salmonid.htm). Currently, the no-use buffer is 60 feet from any salmonid-supporting waters. In-water or near-shore work within the five sub-areas located within the North Area ROW will be preformed within the date ranges below, unless otherwise authorized by NMFS: • The Delta: Any of the waterways in the action area that are south and west of the City of Sacramento. June 1 and October 15 of any given year. • The Mainstem Sacramento River - South: The waters of the Sacramento River from the City of Sacramento north to Hamilton City. June 1 and October 15 of any given year. • The Mainstem Sacramento River - North: The waters of the Sacramento River from Hamilton City north to Keswick Dam. December 1 and April 1 of any given year. • Butte, Mill, Deer, and Battle Creeks: Any of the waters that comprise the forks or mainstems of these four named creeks. December 1 and April 1 of any given year. • The North State Tributary Area: Any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks, as described above. June 1 and October 15 of any given year. Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodable, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time, and pump intakes will be screened to meet NMFS criteria. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of NMFS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate federal land manager, land owner, or agency.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B056a	Sacramento River winter-run chinook salmon *Oncorhynchus tshawytscha* (cont.)		A, B, and C	Critical habitat: Follow PCM-B056. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of NMFS reporting requirements.
PCM-B057	Shortnose sucker *Chasmistes brevirostris*	FE/SE	A	Follow SOPs and PCM-W002.
			B	Follow PCM-W002. Because of potential range overlap with listed salmonids, in-water or near-shore work will only occur between June 1 and October 15 within the North State Tributary Area (any of the waterways in the action area that are north of the City of Sacramento and flow into the mainstem Sacramento River, excluding Butte, Mill, Deer, and Battle Creeks), unless otherwise authorized by USFWS. Instream O&M activities will be completely isolated from the active flowing stream. This will be accomplished by building cofferdams or temporary berms to keep O&M activities out of stream channels. Cofferdams or temporary berms will be constructed using non-erodable, clean materials. Water from these O&M envelopes will be transported off site or pumped to sediment or percolation basins. Cofferdams or berms will not impede the movement of fish at any time. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWSreporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
AMPHIBIANS				
PCM-B058	California red-legged frog *Rana draytonii*	FT	A	Follow SOPs and PCM-W002.
			B and C	Follow all measures for Category A above. A Service-approved biologist[3] will identify potential California red-legged frog (CRLF) breeding habitat and will flag a 500-foot buffer. The following restrictions apply within the buffer: • Vehicles must remain on existing access roads and maintain a speed limit of 15mph; • Only manual vegetation removal is allowed; • Only direct (e.g. injection and cut-stump) herbicide application methods are allowed, except when otherwise restricted; • No ground disturbance (e.g. digging or auguring); and • Erosion-control devices will be of a material that will not entrap amphibians. If it is not possible to follow the above-stated measures, a preactivity survey will be conducted no more than 24 hours before O&M activities begin. A Service-approved biologist will remain on site during all activities to ensure protection of CRLFs OR an exclusion barrier will be constructed around the work site, following Service-approved methods and materials, which will be removed at the end of the work activity. Crews will inspect trenches left open for more than 24 hours for trapped animals. Only a Service-approved biologist will remove trapped animals. To comply with the California red-legged frog injunction for herbicide applications, Western will ensure that, in the counties named in the injunction, there will be no ground application of any of the chemicals named in the injunction (http://www.epa.gov/espp/litstatus/redleg-frog/steps-info.htm) Currently, the no-use buffer is 60 feet from any aquatic feature, aquatic breeding habitat, non-breeding aquatic habitat, and upland habitat. A brief description of the O&M activity, including location and duration, will be sent to Western's Natural Resources Department in support of USFWS reporting requirements.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B059	California tiger salamander *Ambystoma californiense*	FT	A	Follow SOPs and PCM-W001.
			B and C	Follow all measures for category A above. A Service-approved biologist[3] will identify potential California tiger salamander (CTS) breeding habitat and will flag a 500-foot buffer. The following restrictions apply within the buffer: • Vehicles must remain on existing access roads and maintain a speed limit of 15mph; • Only manual vegetation removal is allowed; • Only direct (e.g. injection and cut-stump) herbicide application methods are allowed, except when otherwise restricted; • No ground disturbance (e.g. digging or auguring); and • Erosion-control devices will be of a material that will not entrap amphibians. If it is not possible to follow the above-stated measures, a preactivity survey will be conducted no more than 24 hours before O&M activities begin. A Service-approved biologist will remain on site during all activities to ensure protection of CTSs OR an exclusion barrier will be constructed around the work site, following Service-approved methods and materials, which will be removed at the end of the work activity. Crews will inspect trenches left open for more than 24 hours for trapped animals. Only a Service-approved biologist will remove trapped animals. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
PCM-B059a			A, B, and C	Critical habitat: Follow PCM-B059. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
PCM-B060	Cascades frog *Rana cascadae*	FSS	A	Follow SOPs.
			B and C	Follow PCM-W002.
PCM-B061	Foothill yellow-legged frog *Rana boylii*	FSS/BLMS	A	Follow SOPs.
			B and C	Follow PCM-W002.
PCM-B062	Oregon spotted frog *Rana pretiosa*	FSS	A	Follow SOPs.
			B and C	Follow PCM-W002.
PCM-B063	Western spadefoot *Spea hammondii*	BLMS	A	Follow SOPs.
			B and C	Follow PCM-W001.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
REPTILES				
PCM-B064	Alameda whipsnake *Masticophis lateralis euryxanthus*	FT	A	Follow SOPs. Vehicles will be restricted to existing access roads and limit speed to 15 mph. Equipment and debris will be placed only in cleared areas where snakes will be readily visible. All activities that will take place on the ground will be conducted during daylight hours to increase chances of sighting in areas where whipsnakes are present.
			B	Follow all measures listed for A above. Shrub removal will be limited in areas of potential habitat; vegetation will be manually cleared and only direct (e.g. injection and cut-stump) herbicide treatment is allowed. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
PCM-B065	Coast horned lizard *Phrynosoma coronatum frontale*	BLMS	A, B, and C	Off-road travel will be minimized. Vehicle speeds will not exceed 15 mph on access and maintenance roads and 10 mph on unimproved access routes.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B066	Giant garter snake *Thamnophis gigas*	FT/ST	A	Follow SOPs and PCM-W002 in aquatic giant garter snake (GGS) habitat.
			B	Follow PCM-W002 in aquatic GGS habitat, which supersedes those below where they are different. Use of herbicides (with the exception of direct application) within 200 feet of potential giant garter snake habitat will be prohibited at all times. Movement of heavy equipment will be confined to existing roadways to minimize habitat disturbance. Vegetation management will be confined to the minimum area necessary to facilitate O&M activities. GGS aquatic and upland habitats will be flagged as environmentally sensitive areas by a Service-approved biologist within or adjacent to the disturbance footprint. Only manual vegetation removal will be allowed within the flagged area. A Service-approved monitor will be present for O&M activities within the flagged area. Ground-disturbing activities will be avoided within 200 feet from the banks of GGS aquatic habitat. If this is not feasible, O&M activities will be conducted between May 1 and September 30, the giant garter snake active period, and all potentially affected aquatic habitats will be dewatered prior to any ground disturbance. Dewatered areas will remain dry with no puddled water remaining for at least 15 consecutive days prior to excavation or filling of that habitat. If a site can not be completely dewatered, prey items will be netted or otherwise salvaged if present. Any temporary fill and debris will be immediately removed and disturbed areas restored to pre-project conditions prior to October 1. Restoration work could include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel. Filter fences and mesh will be of a material that will not entrap reptiles and amphibians. Erosion-control blankets will be used as a last resort because of their tendency to biodegrade slowly and trap reptiles and amphibians. No monofilament plastics will be used for erosion control near aquatic features. If it is not feasible to conduct O&M activities between May 1 and September 30, Western would initiate consultation with USFWS on that action. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B067	Northern sagebrush lizard *Sceloporus graciosus graciosus*	BLMS	A, B, and C	Off-road travel will be minimized. Vehicle speeds will not exceed 15 mph on access and maintenance roads and 10 mph on unimproved access routes.
PCM-B068	Western pond turtle *Actinemys marmorata*	FSS	A	Follow SOPs and PCM-W002.
			B and C	From April 15 to July 15, any ground-disturbing activity within 400 feet of a permanent pond, lake, creek, river, or slough that could affect the bed, bank, or water quality of any of these features will be prohibited OR a qualified biologist[4] will inspect the project area. If adult or juvenile pond turtles are present, a qualified biologist will monitor project activities to ensure that no turtles are harmed. If a qualified biologist determined that nests could be adversely affected, potential nesting areas will be avoided between June 1 and October 31. Follow PCM-W002.
BIRDS				
PCM-B069	American peregrine falcon *Falco peregrinus* (nesting)	SE/FSS	A	Follow SOPs.
			B and C	From January 1 to July 31 herbicide applications and noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be prohibited in the vicinity of potential peregrine falcon nesting habitat (cliffs) OR a qualified biologist[4] will conduct nesting surveys to verify absence. If a nest is detected, all O&M activities and all herbicide applications will be prohibited at a distance determined by the qualified biologist, based on topography and/or other environmental considerations.
PCM-B070	Bald eagle *Haliaeetus leucocephalus* (nesting and wintering)	SE	A	Follow SOPs.
			B and C	From February 1 to August 15 herbicide application or noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be prohibited anywhere that bald eagles are known to nest OR a qualified biologist[4] will conduct nesting surveys using methods described in Jackman and Jenkins 2004. If a nest is detected, all herbicide application and O&M activities will be prohibited at a distance determined by the qualified biologist, based on topography and/or other environmental considerations.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B071	Bank swallow *Riparia riparia* (nesting)	ST	A	Follow SOPs.
			B and C	From April 1 to August 15 rip-rapping of vertical streambanks greater than 3 feet in height and herbicide application within 150 feet of such habitats will be prohibited OR a qualified biologist[4] will conduct nesting surveys prior to O&M activities that involve modifications to such streambanks. If a nesting colony is detected, a qualified biologist will mark and monitor an appropriate buffer zone within which all O&M activities and herbicide applications will be prohibited from April 1 to August 15. Follow PCM-W002.
PCM-B072	California black rail *Laterallus jamaicensis coturniculus*	ST	A	Follow SOPs and PCM-W002.
			B and C	Because black rails are resident where they occur (i.e., not migratory), herbicide use in potential black rail habitat will be prohibited (with the exception of direct application) all year long unless, under guidance of CDFG, the habitat is determined to be unoccupied. From February 15 to July 31, surface disturbances including noise or changes to the hydrological regime will be prohibited in potential black rail habitat (shallowly flooded wetlands or irrigated pasture) OR a qualified biologist[4] will conduct nesting surveys to verify absence. If nesting activity is detected or likely, a qualified biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities will be prohibited from February 15 to July 31. Follow PCM-W002.
PCM-B073	California spotted owl *Strix occidentalis occidentalis*	FSS/BLMS	A	Follow SOPs.
			B and C	From April 1 to June 15 herbicide application (with the exception of direct application), tree removal, pruning, topping, and other disturbances will be prohibited in suitable habitat (forest) OR a qualified biologist[4] will conduct nest surveys using methods described in CDFG 1992. If a nest was detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities and herbicide applications will be prohibited from April 1 to June 15.
PCM-B074	Great gray owl *Strix nebulosa* (nesting)	SE/FSS	A	Follow SOPs.
			B	From March 15 to July 31 herbicide application (with the exception of direct application) and removal of snags or trees will be prohibited OR a qualified biologist[4] will conduct nesting surveys using methods described in Beck & Winter 2000 to verify absence. If a nest was detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities and herbicide applications will be prohibited from March 15 – July 31.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B074 (cont.)	Great gray owl *Strix nebulosa* (nesting)	SE/FSS	C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
PCM-B075	Greater sage grouse *Centrocercus urophasianus* (nesting and leks)	FSS/BLMS	A	Follow SOPs.
			B and C	From March 1 to September 31 herbicide application (with the exception of direct application), vegetation clearing, and surface disturbance will be prohibited in sagebrush habitats OR a qualified biologist[4] will conduct surveys for leks and nests to verify absence. If nesting activity or leks are detected or known, a qualified biologist will mark and monitor an appropriate buffer zone around nests or leks within which all O&M activities and herbicide applications will be prohibited from March 1 to September 31.
PCM-B076	Greater sandhill crane *Grus canadensis tabida* (nesting and wintering)	ST/FSS	A	Follow SOPs and PCM-W002.
			B and C	From March 15 to August 31 herbicide application (with the exception of direct application), vegetation clearing, and ground disturbance will be prohibited in marshes, uplands adjacent to marshes, pastures, and meadows OR a qualified biologist[4] will conduct nesting surveys prior to O&M activities. If nesting activity is detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities and herbicide applications will be prohibited from March 15 to August 31. Follow PCM-W002.
PCM-B077	Little willow flycatcher *Empidonax traillii brewsteri* (nesting)	SE/FSS	A	Follow SOPs and PCM-W002.
			B and C	From May 15 to August 31 herbicide application (with the exception of direct application) and vegetation clearing will be prohibited in wetlands or thickets of willows and low-growing shrubs OR a qualified biologist[4] will conduct nesting surveys prior to O&M activity using methods described in Bombay et al. 2000. If nesting activity is detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities and herbicide applications will be prohibited from May 15 to August 31. Follow PCM-W002.
PCM-B078	Northern goshawk *Accipiter gentilis* (nesting)	FSS/BLMS	A	Follow SOPs.
			B and C	From February 15 to August 15 herbicide application (with the exception of direct application), tree removal, and noisy or disturbing O&M activities (e.g., chain saws, mechanical chippers) will be prohibited OR a qualified biologist[4] will conduct nest surveys using methods described in USDA 2005. If a nest is detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities and herbicide applications will be prohibited from February 15 to August 15.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B079	Northern spotted owl *Strix occidentalis caurina*	FT	A	Follow SOPs. Aerial and ground patrols are permissible year-round. From February 1 to July 31 any noisy O&M activities that require equipment other than hand tools and pickup trucks will be prohibited. If O&M activities need to be conducted between February 1 and July 31, a Service-approved biologist[3] will conduct protocol nest surveys using methods described in CDFG 1992 (or the most current survey protocol) under guidance of US Fish and Wildlife Service. If a nest is detected, the US Fish and Wildlife Service will be contacted for further guidance.
			B	From February 1 to July 31 herbicide application (with the exception of direct application), tree removal, and any noisy or disturbing O&M activities (e.g., chain saw, mechanical chipper) will be prohibited. O&M activities that only require the use of hand tools and pickup trucks are allowable within this time frame. If O&M activities need to be conducted between February 1 and July 31, a Service-approved biologist[3] will conduct protocol nest surveys using methods described in CDFG 1992 (or the most current survey protocol) under guidance of US Fish and Wildlife Service. If a nest is detected, the US Fish and Wildlife Service will be contacted for further guidance. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.
			C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
PCM-B079a			A, B, and C	Critical habitat: Follow PCM-B079. For Category B and C activities, a description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B080	Swainson's hawk *Buteo swainsoni* (nesting)	ST/FSS	A, B, and C	From April 1 to July 31 herbicide application and tree removal will be prohibited. A 0.25-mile buffer zone will be established and maintained around potential Swainson's hawk nest trees, within which there will be no intensive disturbance (e.g., use of heavy equipment, power saws, chippers, cranes, or draglines). This buffer may be adjusted, as assessed by a qualified biologist[4], based on changes in sensitivity exhibited by birds over the course of the nesting season and the type of O&M activity performed (e.g., high noise or human activity such as mechanical vegetation maintenance versus low noise or human activity such as semi-annual patrols). Within 0.25 mile of an active nest (as confirmed by a qualified biologist), routine O&M activities will be deferred until after the young have fledged or until it was determined by a qualified biologist that the activities will not adversely affect adults or young OR a qualified biologist will conduct nest surveys using methods described in SHTAC 2000 (or the most recent survey protocol) to determine absence.
PCM-B081	Tricolored blackbird *Agelaius tricolor* (nesting colony)	BLMS	A	Follow SOPs.
			B and C	From March 15 to August 15 herbicide application (with the exception of direct application) and vegetation clearing/disturbance will be prohibited in marshes, willows, and blackberry thickets OR a qualified biologist[4] will conduct a nesting survey prior to O&M activities. If nesting activity is detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nesting colony within which all O&M activities and herbicide applications will be prohibited from March 15 to August 15. Follow PCM-W002.
PCM-B082	Western burrowing owl *Athene cunicularia* (burrow sites winter and summer)	SSC/BLMS	A	Follow SOPs.
			B and C	From February 1 to August 31 herbicide application (with the exception of direct application) and other O&M activity will be prohibited within 250 feet of potential burrowing owl nesting dens (ground squirrel burrows, culverts, concrete slabs, debris piles that could support nesting burrowing owls). From September 1 through January 31, disturbance will be prohibited within 160 feet of potential burrowing owl dens. OR a qualified biologist[4] will conduct nesting and wintering surveys using methods described in California Burrowing Owl Consortium 1993. If nesting or wintering activity is detected, a qualified biologist will mark and monitor an appropriate non-disturbance buffer in the vicinity of burrows that have been active within the last three years. Within the buffer zone, all O&M activities and herbicide applications will be prohibited from February 1 to August 31.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B083	Western yellow-billed cuckoo *Coccyzus americanus occidentalis* (nesting)	SE/FSS	A	Follow SOPs and PCM-W002.
			B and C	Follow PCM-W002. From March 15 to September 31 herbicide application (with the exception of direct application) or tree/vegetation disturbance will be prohibited in riparian forest OR a qualified biologist[4] will conduct nest surveys. If nesting activity is detected, a qualified biologist will mark and monitor an appropriate buffer zone around the nest within which all O&M activities and herbicide applications will be prohibited from March 15 to September 31.
MAMMALS				
PCM-B084	American marten *Martes americana sierra*	FSS	A, B, and C	Between March 1 and August 31, off-road vehicle travel will be avoided. If off-road travel or ground disturbance is required in potential marten habitat at any time of year, disturbance to downfall, snags, downed trees/logs, and stumps will be avoided. Snags, downfall, and stumps will never be moved or removed unless they are a specific safety concern.
PCM-B085	California wolverine *Gulo gulo luteus*	ST/FSS	A, B, and C	Between January 1 and August 31, off-road vehicle travel and activity will be avoided. If off-road travel or ground disturbance is required in potential wolverine habitat, a qualified biologist[4] will determine the presence or absence of wolverines.
PCM-B086	Fringed myotis *Myotis thysanodes*	BLMS	A	Follow SOPs.
			B and C	Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of caves, mine tunnels, and rock outcrops. Snags and live trees will be left standing to the maximum extent possible.
PCM-B087	Greater western mastiff bat *Eumops perotis californicus*	BLMS	A	Follow SOPs.
			B and C	Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of significant rock outcrops.
PCM-B088	Long-eared myotis *Myotis evotis*	BLMS	A	Follow SOPs.
			B and C	Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of caves, mine tunnels, and rock outcrops. Snags and live trees will be left standing to the maximum extent possible.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B089	Pacific fisher *Martes pennanti*	FSS/BLMS	A, B, and C	Between February 1 and August 1, off-road vehicle travel and activity will be avoided If off-road travel or ground disturbance is required in potential fisher habitat at any time of year, disturbance to downfall, snags, downed trees/logs, and stumps will be minimized. Snags, downfall, and stumps will never be moved or removed unless they are a specific safety concern.
PCM-B090	Pallid bat *Antrozous pallidus*	FSS/BLMS	A	Follow SOPs.
			B and C	Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of caves, mine tunnels, and rock outcrops. Snags and live trees will be left standing to the maximum extent possible.
PCM-B091	Pygmy rabbit *Brachylagus idahoensis*	BLMS	A	Follow SOPs.
			B and C	Off-road travel will be prohibited in pygmy rabbit habitat. Where off-road travel or activities is required, trampling or driving over sagebrush and other shrubs of any size will be prohibited.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B092	San Joaquin kit fox *Vulpes macrotis mutica*	FE/ST	A	Follow SOPs
			B	O&M activities will be avoided between Interstate 580 and the Tesla Substation from February 1 through May 31, the kit fox breeding season. Prior to O&M activities that involve ground disturbance, a qualified biologist[4] will survey the proposed disturbance footprint and all areas within 250 feet of the proposed activity for potential kit fox den sites. Survey methods and protection measures will be consistent with those described in USFWS 1999b and USFWS 1999c or by other more current methods approved by the USFWS. The status of all dens will be determined and mapped; results will be submitted to USFWS within 5 working days after survey completion and before start of ground disturbance. All potential den sites outside the disturbance footprint will be conspicuously marked with stakes and flagging 30 days prior to ground-disturbing activities using materials that do not prevent access by kit foxes. Circular exclusion zones will be established around kit fox dens, and will have a radius measured outward from the entrance or cluster of entrances of 50 feet for potential dens, 100 feet for known dens; the distance for natal or pupping dens will be determined in coordination with USFWS and CDFG. No ground-disturbing activities will be permitted within exclusion zones. If destruction of a potential or known den is unavoidable within the disturbance footprint, the den site will be monitored by a Service-approved biologist[3] for a period of at least three days prior to disturbance. Unoccupied dens could be blocked with a sand bag or hand excavated to prevent occupation until O&M activities are completed. Procedures for monitoring and excavating will be consistent with those described in USFWS 1999c. If the den is occupied, Western would initiate consultation with USFWS for that project. O&M activities will take place only between one hour after sunrise and one hour before sunset except when emergencies necessitate night work. If nighttime construction is required, lights will be directed to the minimum area needed to illuminate project work areas. All trash, especially food-related trash, will be deposited into closed containers and removed on a daily basis. Excavations greater than three feet deep will be fenced, covered, or filled at the end of each working day, or will have escape ramps provided to prevent the entrapment of foxes. Pipes will be capped at all times until they are used. Any mortalities or injuries to kit foxes that occur as a result of project-related or O&M-related actions will be reported to the Western Natural Resources Department, who will report the incident to the USFWS. A description of the O&M activity, including location and duration, will be kept on file at Western's Natural Resources Department in support of USFWS reporting requirements.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B092 (cont.)	San Joaquin kit fox *Vulpes macrotis mutica*	FE/ST	C	Follow all measures listed for A and B above. Prior to site mobilization, Western will provide notification of the O&M activity to the appropriate Federal land manager, land owner, or agency.
PCM-B093	San Joaquin pocket mouse *Perognathus inornatus inornatus*	BLMS	A, B, and C	Off-road travel and activity will be avoided to the maximum extent possible.
PCM-B094	Sierra Nevada red fox *Vulpes vulpes necator*	ST/FSS	A	Follow SOPs.
			B and C	From March 1 through August 31, any off-road travel and activity, noise-generating equipment use, vegetation removal, herbicide use, or ground-disturbing activities will be avoided. If this is not feasible, a pre-activity survey by a qualified biologist[4] will be conducted to determine whether pupping dens are present. Activities within 500 feet of pupping dens will be avoided between March 1 and August 31. If this is not feasible, Western will coordinate with CDFG.
PCM-B095	Spotted bat *Euderma maculatum*	BLMS	A	Follow SOPs.
			B and C	Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of cliffs and rock outcrops.
PCM-B096	Townsend's big-eared bat *Corynorhinus townsendii*	FSS/BLMS	A	Follow SOPs.
			B and C	Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of caves, mines, and tunnels.
PCM-B097	Western red bat *Lasiurus blossevillii*	FSS	A	Follow SOPs.
			B and C	Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of broadleaf woodlands in riparian areas. Live broadleaf trees will be left standing to the maximum extent possible.

PCM-ID	Species Name	Status[1]	Activity Category	PCM
PCM-B098	Western small-footed myotis *Myotis ciliolabrum*	BLMS	A	Follow SOPs.
			B and C	Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of caves, mine tunnels, and rock outcrops. Snags and live trees will be left standing to the maximum extent possible.
PCM-B099	Yuma myotis *Myotis yumanensis*	BLMS	A	Follow SOPs.
			B and C	Noisy or disturbing O&M activities (e.g., power saws, mechanical chippers) will be minimized in the vicinity of caves, mine tunnels, and rock outcrops. Snags and live trees will be left standing to the maximum extent possible.

[1] Status codes: BLMS= BLM sensitive, FE = Federally endangered, FSS= Forest Service sensitive, FT = Federally threatened, SE = state endangered, SSC = state species of special concern, ST = state threatened
[2] Qualified personnel are those who are capable of consistently and accurately identifying the subject resource and have been approved by Western's Natural Resource Department.
[3] A Service-approved biologist is one whose resume has been submitted to and who has been formally approved by the US Fish and Wildlife Service. This biologist's resume reflects a high level of experience with the Federally listed species covered by a particular PCM.
[4] A qualified biologist is one who has previous experience with the species covered by a particular PCM and who understands the habitat requirements of the species such that he/she can make a well-informed decision about potential presence, potential project-related impacts, and appropriate avoidance/minimization measures.

Table 6-3 Water Resources/Aquatic Habitat Project Conservation Measures

PCM-ID	Activity Category	PCM
VERNAL POOLS, VERNAL POOL GRASSLANDS, AND SEASONAL WETLANDS		
PCM-W001	A	Vehicle access will be permitted only on well-established roads unless soils are dry. Soils will be considered sufficiently dry for vehicle access when they resist compaction, and after annual plants have set seed (generally June 1 to September 30, or as determined by qualified personnel based on personal observation of the soils). For patrolling the ROW off of established roads in a pickup truck, or for inspecting hardware on structures with a bucket truck, vernal pools, vernal pool grasslands, and seasonal wetlands will be avoided by 50 feet during the wet season. No avoidance will be necessary if soils are completely dry (generally June 1 to September 30).
	B and C	Vehicle access will be permitted only on well-established roads unless soils are dry. Soils will be considered sufficiently dry for vehicle access when they resist compaction, and after annual plants have set seed (generally June 1 to September 30, or as determined by a qualified biologist based on personal observation of the soils). If vegetation-management activities are proposed within 250 feet of a vernal pool, vernal pool grassland, or seasonal wetland, a qualified biologist will be present at all times to ensure the protection of the work-area limits below OR qualified personnel will clearly fence the limits of the work area, according to limits presented in the following, prior to the maintenance activity. (The herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different.) • Mixing or application of pesticides, herbicides, or other potentially toxic chemicals will be prohibited. • Herbicide application to target vegetation by direct application methods (e.g. injection or cut-stump treatment) will be prohibited within 50 feet in the wet season (generally October 1 to May 31) and allowed up to the edge of the pool or seasonal wetland in the dry season (generally June 1 to September 30). • Herbicide application by basal spray and foliage spray methods will be prohibited within 100 feet in any season. • Manual clearing of vegetation (chainsaw, axe, clippers) will be allowed up to the edge of the pool or seasonal wetland in the wet season (generally October 1 to May 31); a buffer will not be necessary in the dry season (generally June 1 to September 30). • Mechanical clearing of vegetation (heavy-duty mowers, crawler tractors, or chippers) will be prohibited within 100 feet in the wet season (generally October 1 to May 31); a buffer will not necessary in the dry season (generally June 1 to September 30). All equipment will be stored, fueled, and maintained in a vehicle staging area 300 feet or the maximum distance possible from any vernal pool, vernal pool grassland, or seasonal wetland, and no closer than 200 feet unless a bermed (no ground disturbance) and lined refueling area is constructed and hazardous-material absorbent pads are available in the event of a spill. Vehicles will be inspected daily for fluid leaks before leaving the staging area. When feasible, all maintenance activities will be routed around wet areas while ensuring that the route does not cross sensitive resource areas. For ground-disturbing activities, a 100-foot (wet season) or 50-foot (dry season) buffer zone from the edge of the vernal pool or wetland will be maintained and the vernal pool or wetland will be protected from siltation and contaminant run-off by use of erosion control. Erosion-control materials will be of a tightly woven natural fiber netting or similar material that will not entrap reptiles and amphibians (e.g., coconut coir matting). No monofilament plastics will be used for erosion control near vernal pools and seasonal wetlands. Erosion-control measures will be placed between the outer edge of the buffer and the activity area. All fiber rolls and hay bales used for erosion control will be certified as free of noxious weed seed.

PCM-ID	Activity Category	PCM
PCM-W001 (cont.)	B and C	For ground-disturbing activities, such as installation or repair of underground components (water, power, communication, or ground electrical line) or soil borings, a 250-foot buffer zone will be maintained.
PCM-W001a	A, B, and C	Follow PCM-W001.

PCM-ID	Activity Category	PCM
SEEP, SPRING, POND, LAKE, RIVER, STREAM, AND MARSH		
PCM-W002	A	The following activities will be prohibited at all times within 100 feet of a seep, spring, pond, lake, river, stream, or marsh, and their associated habitats: • vehicle access, except on existing access and maintenance roads • dumping, stockpiling, or burying of any material • mixing of pesticides, herbicides, or other potentially toxic chemicals • open petroleum products All equipment will be stored, fueled, and maintained in a vehicle staging area 300 feet or the maximum distance possible from any seep, spring, pond, lake, river, stream, marsh, or their associated habitats. Vehicles will be inspected daily for fluid leaks before leaving the staging area. When feasible, all maintenance activities will be routed around wet areas while ensuring that the route does not cross sensitive resource areas.
	B and C	The following activities will be prohibited at all times within 100 feet of a seep, spring, pond, lake, river, stream, or marsh, and their associated habitats: • vehicle access, except on existing access and maintenance roads • dumping, stockpiling, or burying of any material, except as required for specific O&M activities (e.g., rip-rap) • mixing of pesticides, herbicides, or other potentially toxic chemicals • open petroleum products Equipment will be stored, fueled, and maintained in a vehicle staging area 300 feet or the maximum distance possible from any seep, spring, pond, lake, river, stream, marsh, or their associated habitats. Vehicles will be inspected daily for fluid leaks before leaving the staging area. When feasible, all maintenance activities will be routed around wet areas while ensuring that the route does not cross sensitive resource areas. For vegetation management or maintenance within 100 feet of any seep, spring, pond, lake, river, stream, or marsh, or any of their associated habitats, the following work-area limits will be provided (the herbicide restriction measures generated by the PRESCRIBE database supersede those below where they are different): • Only manual-clearing of vegetation will be permitted • Basal and foliar application of herbicides will be prohibited. Only direct application treatments (e.g. injection and cut-stump) of target vegetation will be allowed using herbicide approved for aquatic use by the U.S. EPA and in coordination with the appropriate federal land manager. All instream work, such as culvert replacement or installation, bank recontouring, or placement of bank protection below the high-water line, will be conducted during no-flow or low-flow conditions and in a manner to avoid impacts to water flow, and will be restricted to the minimum area necessary for completion of the work. All equipment used below the ordinary high-water mark will be free of exterior contamination. For ground-disturbing activities, a 100-foot buffer zone will be maintained from the edge of the seep, spring, pond, lake, river, stream,

PCM-ID	Activity Category	PCM
PCM-W002 (cont.)	B and C (cont.)	marsh, or their associated habitats for protection from siltation and run-off of contaminants by use of erosion-control measures. Erosion-control materials will be of a tightly woven natural fiber netting or similar material that will not entrap reptiles and amphibians (e.g., coconut coir matting). No monofilament plastics will be used for erosion control near vernal pools and seasonal wetlands. Erosion-control measures will be placed between the outer edge of the buffer and the activity area. All fiber rolls and hay bales used for erosion control will be certified as free of noxious weed seed. Seed mixtures applied for erosion control and restoration will be certified as free of noxious weed seed, and will be composed of native species or sterile nonnative species. Western will obtain appropriate 404 discharge and 401 water-quality permits prior to any maintenance activities that must take place within jurisdictional wetlands or other waters of the US. These will be coordinated with USACE and RWQCB as needed. Dewatering work for maintenance operations adjacent to or encroaching on seeps, springs, ponds, lakes, rivers, streams, or marshes will be conducted to prevent muddy water and eroded materials from entering the water or marsh. All stream crossings will be constructed such that they permit fish to pass and reduce the potential for stream flows to result in increased scour, washout, or disruption of water flow. Wherever possible, stream crossings will be located in stream segments without riparian vegetation, and structure footings will be installed outside of stream banks. Should Western need to modify existing access roads or install new access roads, they will be built at right angles to streams and washes to the extent practicable. Trees providing shade to water bodies will be trimmed only to the extent necessary and will not be removed unless they present a specific safety concern. Trees that must be removed will be felled to avoid damaging riparian habitat. They will be felled out of and away from the stream maintenance zone and riparian habitat, including springs, seeps, bogs, and any other wet or saturated areas. Trees will not be felled into streams in a way that will obstruct or impair the flow of water, unless instructed otherwise. Tree removal that could cause stream-bank erosion or result in increased water temperatures will not be conducted in and around streams. Tree removal in riparian or wetland areas will be done only by manual methods.

Table 6-4 Cultural Resources Project Conservation Measures

PCM-ID	Activity Category	Description
Surveyed Areas (Resource Present) – PCMs		
PCM-C001	A	Avoid driving vehicles or equipment over archeological sites. If infeasible, only vehicles with rubberized tires/treads are allowed within sites; no skidding or steel-tracked equipment.
		Stage vehicles and equipment outside of cultural resource sites.
		Only the following activities are allowed in cultural sites: manual clearing of vegetation, and chip/broadcast disposal of cut vegetation.
	B and C	Cultural resource sites that are located within an area where ground-disturbing activity will take place shall be flagged for avoidance and ground-disturbing activities shall avoid all cultural resource sites. Sites that cannot be avoided will require further consultation with SHPO prior to any ground-disturbing activity.
		Use of petroleum-based herbicides is prohibited in cultural sites.
		A Western-approved archeological monitor may be required during ground disturbing activities. Contact Western's Natural Resource Department.
PCM-ID	Activity Category	Description
Not Protocol Surveyed Areas and Not Surveyed Areas – PCMs		
PCM-C002	A	Instruct crews to pay particular attention for the presence or discovery of cultural materials in areas where protocol-level surveys were not previously conducted.
		Upon discovery of potential buried cultural materials, work within 50 feet of the find will be halted and the discovery will be reported immediately to the Western Natural Resources Department or other designated point of contact. Western will comply with provisions in the National Historic Preservation Act and consult with the California State Historic Preservation Officer to determine measures to avoid the resource or mitigate during maintenance activities.
		If cultural resources are discovered, provisions in PCM-C001 shall be followed.
	B	Follow all measures listed for A above.
		A Western-approved archeological monitor may be required during ground-disturbing activities. Contact Western's Natural Resource Department.

PCM-ID	Activity Category	Description
PCM-C002 (cont.)	B (cont.)	Mastication activities shall adhere to the following BMPs: • Western will require mastication operators to prevent blading devices from removing vegetation at ground level to avoid soil disturbance. All mowed vegetation shall not be cut below 6 inches. • Mastication equipment will not be used within areas recently subjected to heavy rains in order to prevent rutting in wet soils from equipment tires. • A qualified archaeologist will be on site during mastication activities to monitor survey areas being cleared of vegetation. Should any cultural resources be detected, mastication activities will cease in the area until an assessment and the significance of the find is made. Results of the monitoring and survey activities will be provided in the annual report.
	C	Follow measures listed for A and B above. A Western-approved archeological monitor may be required. Contact Western's Natural Resource Department.

7. GIS DATABASE

Western has developed the North Area O&M Program using a detailed GIS database. Detailed information regarding all sensitive resources was captured in the field and brought into a user friendly GIS database that Western personnel can use to manage the O&M activities throughout the project area. Western has coordinated with federal land managers in developing this database, which will greatly enhance Western's capabilities in processing proposed maintenance activities in a timely manner.

All information needed to process a proposed maintenance activity is included in the GIS database. Western captured all infrastructure (i.e., towers, transmission lines, and access roads) in the ROW using GPS units; defined the North Area ROWs with polygons; obtained aerial orthophotography and conducted videography of the ROW; and took still photos of transmission line corridors. All data have a spatial accuracy of less than 5 meters horizontal resolution. This information can be accessed using ArcGIS or ArcView. The final GIS data includes specific locations for:

- gates;
- crossing lines – other transmission lines, pipes crossing the ROW, fences;
- crossing points – culverts, low water, etc.;
- cultural isolates;
- cultural diagnostic artifacts;
- cultural lines;
- cultural sites;
- cultural surveys – where protocol/non-protocol surveys were conducted;
- species points and polygons;
- elderberry points and polygons; and
- habitat points, lines, and polygons.

Western has also provided datasets that can easily be reviewed:

- **Category A, B, C –** ROW span and access road polygons color-coded green, yellow, or red based on maintenance activity category and sensitive resource presence within each polygon. This dataset will be useful in quickly identifying the critical issues associated with each span and maintenance activity.
- **Sensitive Resource Lookup Table –** a table that lists all potential and observed occurrences of sensitive resources for each ROW span, access road, and habitat polygon.

7.1 GIS Data on DVD/External Drive

Western will provide TANC with a DVD/External Drive with all files for the North Area O&M Program for the COTP ROW. The DVD/External Drive will include the following information:

- All GIS data listed above in shapefile format;
- TANC's infrastructure data: transmission lines, ROW, access roads, structures, facilities, Federal lands, various boundaries, street data;
- Aerial Ortho Imagery (MrSID or TIFF format) and image catalog;
- Aerial videos and tower photos;
- North Area EA MXD file to be used with ArcGIS;
- LinearVision Viewer 2.4.55 to view videos; and
- Readme.txt file.

7.2 GIS Data Accessibility

The GIS data will be accessed by Western resource staff and Western field crews. The following describes the data accessibility for each team member:

- Western's office staff will access GIS data and PCM information through the intranet ArcIMS site. Category A, B, C, and habitat layers are turned on through the table of contents list and each span or habitat is then identified for a list of resources and PCMs.
- Western's field staff will access GIS data and PCM information through the ArcPad field GIS application installed on field laptops. Category A, B, C, and sensitive-resource layers are turned on through the icon buttons at the top of the viewing window. ArcPad does <u>not</u> list sensitive resources and PCMs per span or habitat.
- Cooperating agencies will access GIS data and PCM information through the North Area EA MXD file for ArcGIS. A 9.2 version of ArcGIS ArcView is recommended. Category A, B, C, and sensitive-resource layers are turned on through the table of contents list and each span or habitat is then identified for a list of resources and PCMs.

7.3 GIS Definitions

Definitions for various GIS terms and acronyms are as follows:

- **<u>ArcGIS ArcView</u>** – a GIS application developed by Environmental Systems Research Institute (ESRI) in Redlands, CA.

- **ArcIMS** – internet mapping service application: a web application that serves up GIS capability developed by ESRI.
- **ArcPad** – a simple field GIS application developed by ESRI.
- **GIS** – geographic information system: allows access of spatial data through a graphic window or through a table. Each spatial feature (point, line, polygon) has a true-world location and has an associated attribute in a table.
- **GPS** – global positioning system: a system of satellites that allow field users to collect data precisely to the feature's true-world location.
- **MrSID** – compressed 20:1 aerial imagery file type using Lizardtech GeoExpress software.
- **MXD** – a project file to view GIS data in an ArcGIS ArcView application.
- **Shapefile** – a simple geographic file of point, line, or polygon with an associated table represented as a graphic in a GIS application.

8. REFERENCES

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_____. 2001. Right-of-Way Maintenance Guidance for Danger Trees, Encroachments, and Access Routes, November 21, 2001.

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Appendix A

Clearance Requirements

APPENDIX A CLEARANCE REQUIREMENTS

Western Area Power Administration
Clearance Requirements for Transmission Line Circuits
White Paper

1. INTRODUCTION

This white paper provides a description of the regulations and guidance pertinent to the management of vegetation as it relates to the reliability of electric transmission systems. As described in the following sections, a variety of clearance standards is used throughout the industry.

According to a 2004 Federal Energy Regulatory Commission (FERC) report[1], the vast majority of transmission owners follow the National Electrical Safety Code (NESC) rules or American National Standards Institute (ANSI) guidelines, or both, when managing vegetation around transmission-system equipment. The NESC deals with electric safety rules, including transmission wire clearance standards, whereas the applicable ANSI code deals with the practice of pruning and removal of vegetation. In developing an effective, compliant, and environmentally responsible vegetation management approach, Western Area Power Administration (Western) has taken into consideration the regulations and guidance described within this white paper.

2. KEY STANDARDS RELATING TO ELECTRIC SYSTEM RELIABILITY AND SAFETY

The following standards, guidelines, rules, and regulations identify requirements and suggested practices for vegetation management in transmission line corridors.

2.1 National Electric Safety Code 1977, 2006

The NESC is the national code covering a variety of basic provisions regarding electric supply stations, overhead and underground electric supply and communication lines. It contains work rules for construction, maintenance, and operation of electric supply and communication lines and equipment.

NESC Rule 218 generally requires that "trees that interfere with ungrounded supply conductors should be trimmed or removed." Additionally, the rule is generally interpreted to require utilities to perform a "reasonable" amount of utility vegetation management (UVM) work. It does not specify cycles, clearances, program

[1] Utility Vegetation Management and Bulk Electric Reliability Report from the Federal Energy Regulatory Commission, September 7, 2004. http://www.ferc.gov/industries/electric/indus-act/reliability/veg-mgmt-rpt-final.pdf

requirements, performance objectives, or any other type of requirement that would result in meeting specific UVM objectives.

Rule 218 was revised in 2006 to note that utility experience is a key issue in developing clearance standards. Both the frequency of pruning and the distance by which vegetation is pruned back from the lines are affected by the line voltage class, the relative growth rates, and the failure characteristics of relevant plant species, right-of-way limitations, location of the vegetation relative to the conductors, potential movement of conductors and vegetation during routine winds, and the sag of conductors due to elevated temperatures or ice loadings.

NESC Rule 232, 233, and 234 prescribe clearances of wires from ground, structures, and other installations but provide no specific information with respect to clearances to vegetation. Rule 217A4 requires supporting structures to be kept free from climbing hazards, such as vines. However, no further specificity is provided.

2.2 American National Standards Institute

ANSI Z133.1 *Pruning, Trimming, Repairing, Maintaining, and Removing Trees and Cutting Brush – Safety Requirements* is the industry safety standard for working on vegetation in proximity to energized electrical apparatus. Table 2-1 provides the minimum approach distances from energized conductors for qualified line-clearance arborists. Table 2-2 provides the recommended distance from energized conductors for persons other than a qualified line-clearance arborist.

Table 2-1 Minimum Approach Distances from Energized Conductors for Qualified Line-Clearance Arborists

Nominal Voltage kV phase-to-phase	Distance (feet) Sea Level to 5,000 ft	Distance (feet) 5,001 to 10,000 ft
230.0 – 242.0	8	9
500.0	19	21

Source: ANSI Z133.1 Revision – October 2000

Table 2-2 Minimum Approach Distances from Energized Conductors for Persons Other than a Qualified Line-Clearance Arborists

Nominal Voltage kV phase-to-phase	Distance (feet)
230.0 – 242.0	16
500.0	26

Source: ANSI Z133.1 Revision – October 2000

2.3 North American Electric Reliability Council Standards

NERC is a nonprofit corporation whose members are ten regional reliability councils. NERC's function is to maintain and improve the reliability of the North American integrated electric transmission system, including preventing outages from vegetation located in transmission ROWs, minimizing outages from vegetation located adjacent to ROWs, and maintaining clearances between transmission lines and vegetation on and along transmission ROWs. As a result of the recommendations following the August 14, 2003 blackouts on the East Coast, NERC was charged with developing a vegetation management standard that would be applicable to all utilities and that would provide greater specificity than the NESC and ANSI standards.

Standard FAC-003-1, Transmission Vegetation Management Program, became effective April 7, 2006 and mandatory for all utilities, pursuant to Section 1211 of the Energy Policy Act of 2005. This standard applies to all transmission lines operated at 200 kV and above and to any lower-voltage lines considered critical to the reliability of the electric system in the region. The transmission owner must prepare, and keep current, a formal transmission vegetation management program (TVMP). The TVMP must identify and document clearances between vegetation and overhead, ungrounded supply conductors, taking into consideration transmission line voltage, the effects of ambient temperatures on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. Minimum clearance distances shall be no less than those set forth in IEEE Standard 516-2003. Western's North Area transmission lines are 230 kV and 500 kV. As such, Western must demonstrate compliance with Standard FAC-003-1 and is in the process of developing a TVMP. As described in section 2.6, Western is developing Clearance 1 and Clearance 2 standards based on IEEE Standard 516-200 and OSHA Standard 1910.333 (c)(3)(i).

Clearance 1 requirements are defined as the appropriate clearance distances to be achieved at the time of transmission vegetation management. Clearance 2 requirements are the specific radial clearances to be maintained between the vegetation and conductors under all rated electrical operating conditions.

2.4 Institute of Electrical and Electronics Engineers (IEEE) Standard 516-2003

The Institute of Electrical and Electronics Engineers (IEEE) is a leading authority in setting standards for the electric power industry. Standard 516-2003, Guide for Maintenance Methods on Energized Power Lines, provides minimum vegetation-to-conductor clearances to maintain electrical integrity (see Table 2-3).

Table 2-3 IEEE Standard 516-2003: Minimum Vegetation-to-Conductor Distances

Voltage (kV)	Distance (ft)	Distance (m)
500	19	5.7
230	13	3.9

2.5 California Public Resource Code

Western also recognizes the California Public Resource Code (PRC) requirements associated with transmission-system safety issues.

Section 4292 - Power Line Hazard Reduction

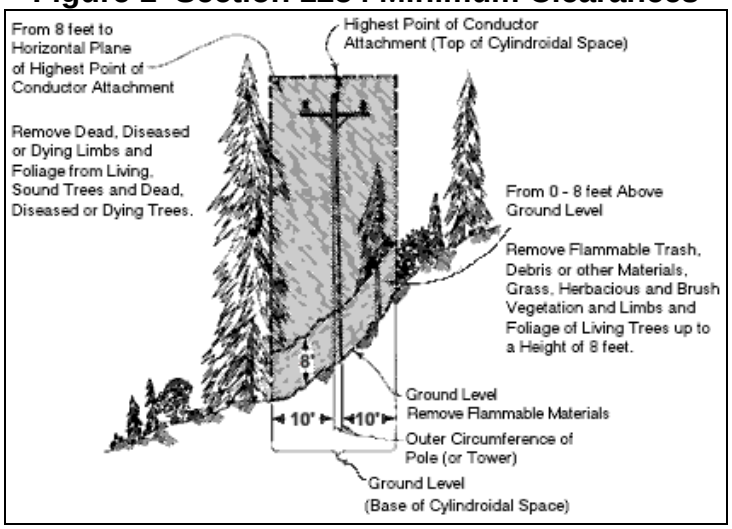
According to PRC Section 4292, Western shall coordinate with land managers to prevent fires caused by electric transmission-system equipment. Also, minimum clearing distances surrounding transmission support structures are specified. As stated in Section 4292:

> Except as otherwise provided in Section 4296, any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or forest-covered land, brush-covered land, or grass-covered land shall, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for fire protection of such areas, maintain around and adjacent to any pole or tower which supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole, a firebreak which consists of a clearing of not less than 10 feet in each direction from the outer circumference of such pole or tower.

Section 1254

The following is a graphical representation of Section 1254 showing the minimum clearances required around a utility pole.

Figure 1 Section 1254 Minimum Clearances



The firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer or

lightning arrester is attached and surrounding each deadend or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of 14, CCR, 1255 or PRC 4296. The radius of the cylindroid is 3.1 m (10 feet) measured horizontally from the outer circumference of the specified pole or tower with height equal to the distance from the intersection of the imaginary vertical exterior surface of the cylindroid with the ground to an intersection with a horizontal plane passing through the highest point at which a conductor is attached to such pole or tower. Flammable vegetation and materials located wholly or partially within the firebreak space shall be treated as follows:

- At ground level - remove flammable materials, including but not limited to, ground litter, duff and dead or desiccated vegetation that will propagate fire.
- From 0 - 2.4 m (0-8 feet) above ground level remove flammable trash, debris or other materials, grass, herbaceous and brush vegetation. All limbs and foliage of living trees shall be removed up to a height of 2.4 m (8 feet).
- From 2.4 m (8 feet) to horizontal plane of highest point of conductor attachment remove dead, diseased, or dying limbs and foliage from living sound trees and any dead, diseased, or dying trees in their entirety.

Section 4293 - Line Clearance Guidelines

Section 4293 provides minimum distances of vegetation clearance from electrical conductor. As specified below, 10 feet in all directions between vegetation and transmission lines would apply to the transmission lines within the North Area Project.

> Except as otherwise provided in Sections 4294 to 4296, inclusive, any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or in forest-covered land, brush-covered land, or grass-covered land shall, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for the fire protection of such areas, maintain a clearance of the respective distances which are specified in this section in all directions between all vegetation and all conductors which are carrying electric current:
>
> (a) For any line which is operating at 2,400 or more volts, but less than 72,000 volts, 4 feet.
>
> (b) For any line which is operating at 72,000 or more volts, but less than 110,000 volts, 6 feet.
>
> (c) For any line which is operating at 110,000 or more volts, 10 feet.
>
> In every case, such distance shall be sufficiently great to furnish the required clearance at any position of the wire, or conductor when the adjacent air temperature is 120 degrees Fahrenheit, or less. Dead trees,

old decadent or rotten trees, trees weakened by decay or disease and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line shall be felled, cut, or trimmed so as to remove such hazard. The director or the agency which has primary responsibility for the fire protection of such areas may permit exceptions from the requirements of this section which are based upon the specific circumstances involved.

2.6 Western Requirements

Effective March 18, 2008, WAPA Orders 430.1 and 450.3A establish guidance and organizational support for the maintenance and safe operation of Western Area Power Administration right-of-way (see Table 2-4). Responsibility for vegetation management and control belongs to Western, but functions are restricted based upon land and resource plans that dictate tree removal or trimming criteria within and adjacent to the ROW. Under this general guidance, vegetation management and control pertains to trees with the immediate potential to fall into transmission-system equipment (hazard trees).

The following table provides criteria for tree removal or trimming, as provided by the 2007 Power System Safety Manual (PSSM), Appendix B, Table B-1. The purpose of the PSSM is to provide direction and guidance necessary so that Western employees can perform work without injury or occupational illness, and to prevent accidents which result in personal injury, illness, property damage, or electrical system interruptions.

As described in section 2.3, Western is in the process of drafting a TVMP order to address NERC's FAC-003-1 clearance requirements. Table 2-4 provides clearance requirements based on information in NERC's FAC-003-1.

Table 2-4 Transmission Line ROW Clearing Requirements

Line Voltage (kV)	General ROW Width (feet)	Clearance 1 Requirements[a] Also WAPA O 430.1	Clearance 2 Requirements[b]
69	75	20 feet	3.3 feet
115	80	21 inches	3.2 inches
230	125 – 150	23 feet	5.3 feet
500	200	29 feet	11.3 feet

Notes: (a) Clearance 1 requirements are from WAPA Orders 430.1 and 450.3A. (b) Clearance 2 requirements are from Western's Power System Safety Manual, Appendix A, Table A-1.

2.7 Utility Vegetation Management and Bulk Electric Reliability Report, Federal Energy Regulatory Commission, Sept. 7, 2004

A CN Utility Consulting Vegetation Management Report[2] prepared on behalf of the FERC identified a number of preferred utility vegetation-management practices, including the following:

- Application of wire zone/ border zone concepts (Figure 2)
- Proper consideration of line sag and sway
- Frequent field inspection of vegetation conditions
- Comprehensive public education programs

The wire zone/border zone approach is considered both environmentally responsible and effective in ensuring reliability. This method involves creating a low-growing vegetation environment directly under transmission lines, which physically prevents dangerous vegetation from encroaching into energized transmission facilities. As a general rule, the higher the voltage, the more sensitive the line will be to tree-related faults. Therefore, higher-voltage transmission lines are typically located higher above the ground in comparison to lower-voltage lines to provide adequate distance from vegetation.

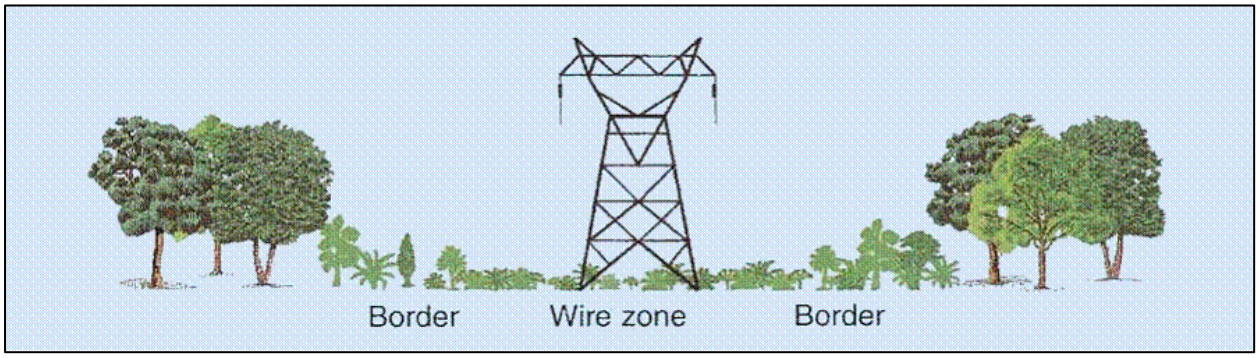
The report states that the wire zone/border zone has "been proven to be effective in reducing and/or eliminating outages related to vegetation on transmission ROW." Additional benefits include reduced long-term maintenance costs, improved habitat for wildlife, biodiversity, and wildland fire mitigation.

Best management practices identified include the following:

- The ROW width should be determined based on the following objective: "No vegetation, or parts of vegetation, shall be allowed to grow or fall into the transmission facilities."
- All transmission UVM work should be identified, scheduled, completed and maintained consistent with wire zone/border zone objectives and industry-accepted protocols.
- Conductor sag and sway must be considered whenever managing transmission ROWs.

[2] CN Utility Consulting, Utility Vegetation Management Final Report, (March 2004) (CNUC Final Vegetation Report). http://www.cnutility.com/images/uvm_final_report.pdf

Figure 2 Wire Zone/Border Zone



2.8 Memorandum of Understanding (MOU) Among the Edison Electric Institute and the U.S. Department of Agriculture (Forest Service), the U.S. Department of Interior (Bureau of Land Management, Fish and Wildlife Service, National Park Service) and the U.S. Environmental Protection Agency.

This MOU was created to enable Federal agencies and utilities to streamline and expedite the management of vegetation near utility facilities, including facilities on Federal lands. The purpose of the MOU is to establish a framework for developing cooperative rights-of-way integrated vegetation management (IVM) practices among the parties to the MOU. The MOU does not impose any binding obligations on any person. The National Park Service, Bureau of Land Management, and Forest Service are a signatory to the MOU, indicating that some level of cooperation with utilities is expected in the management of vegetation near utility lines.

3. CONCLUSIONS

There are many standards, guidelines, and rules that relate to vegetation management; only a handful actually apply to Western as a federal agency, but the provisions of all may be useful in any decision-making and planning undertaken by Western. As presented in this brief white paper, a majority of the clearance requirements are similar to protect public and worker safety, as well as to increase reliability of the system.

As directed by NERC Standard FAC-003-1, Clearance 2 standards must be as restrictive as IEEE Standard 516-200. In addition, Clearance 1 standards must be more restrictive than Clearance 2 standards. Western is using IEEE Standard 516-600 as the basis for developing Clearance 2 standards. Clearance 1 standards are based on Western's Power System Safety Manual, Appendix A, Table A-1.

Appendix B

Herbicide Information

APPENDIX B HERBICIDE APPLICATION

This section describes Western's approach to using herbicides to control vegetation along the North Area ROWs. The approach is based on Western's 2007 Integrated Vegetation Management Guidance (IVM) document and related operations and maintenance (O&M) activities planned for the North Area. Western has developed specific requirements for herbicide use on National Park Service (NPS), U.S. Forest Service (USFS), Bureau of Land Management (BLM), and private lands. Section 1 outlines Western's overall approach to herbicide use for vegetation management. Section 2 summarizes Western's negotiated approach for herbicide use on NPS, USFS, and BLM lands.

1. Western IVM Herbicide Procedures

Historically, Western's vegetation management activities have been restricted primarily to the control of vegetation that will pose a fire or safety hazard to transmission facilities. However, the IVM expands the vegetation-management activities to include the control of noxious or undesirable weeds and to promote low-growing plant communities within the ROW.

Western considered several factors when selecting the appropriate, effective, and safe herbicide for IVM. It is generally desirable to select an herbicide that has low toxicity, will not move from its target or leach into groundwater (low water solubility), and will not remain in the environment for a long period of time (low persistence). Western uses several different ways to apply herbicides. The method selected depends on the type of control needed, the type of vegetation, and the site situation (site conditions and locations). Some of the methods that Western utilizes are stump treatment, basal spray/treatment, foliage spray/treatment, soil treatment (preemergence), and under-surfacing materials treatment.

Sections 7 and 8 of the 2007 IVM provide a wealth of information on herbicide formulation, herbicide application, pre-application procedures, safety precautions, record keeping, and clean up. Table B-1 provides the list of herbicides Western plans to use on NPS, BLM, USFS, and private lands. Section 5 provides a list of standard operating procedures that Western will follow in applying herbicide. For example, PH-SOP-5 requires that all herbicide applicators will have received training and be licensed in appropriate application categories.

2. Western's Approach to Herbicide in NPS, USFS, & BLM

Western has been proactive in collaborating with the NPS, USFS, and BLM in order to understand their concerns with herbicide use on Federal lands. As such, Western has conducted several meetings with the respective agencies to discuss their concerns, especially the use of herbicides. Understandably, the use of herbicides is an important topic of concern. Western has recognized this extremely important issue and has taken initiative to learn more about the use of herbicides on Federal lands. Western has even attended herbicide training with David Bakke, Pesticide-Use Specialist and Invasive

Plants Coordinator State and Private Forestry, of the USFS. The training took place in Sacramento, CA on March 14-16, 2007. This training provided guidance on herbicide use and the associated human and ecological risks.

Western is responsible for the development of interagency agreements, which include the management of noxious weeds. Unlike on private lands where Western develops cooperative agreements with county agents or boards, on federal lands Western will defer compliance with federal and state weed-control laws and regulations to the landowner or administrator. Herbicide use on NPS, USFS, and/or BLM lands is restricted to specifically approved herbicides that the respective agency has approved for application on their jurisdictional lands.

Western will only use herbicides that have been approved and that have had human health and ecological risk assessments prepared. USFS has prepared comprehensive risk assessments for 14 herbicides routinely used in the forest (see website www.fs.fed.us/foresthealth/pesticide/risk.shtml). These documents quantitatively evaluate the probability that a given pesticide use might impose harm on humans or other species in the environment. Table B-1 provides a list of herbicides that Western may request to use on NPS, USFS, and BLM lands.

Table B-1 Herbicides Planned for Use in NPS, BLM, USFS and Private Lands

Herbicide	Trade Name**	EPA Registration Number	Use	Aquatic	Land Use Application			
					NPS	BLM	USFS	Private Lands
Bromacil and Diuron	Krovar® 1 DF**	352-505	Substations; non-sensitive areas only	No				Yes
Chlorsulfuron	Telar® DF**	352-522	ROW	No	Yes[1]	No	Yes	Yes
Clopyralid	Transline®**	62719-259	Noxious Weed Control	No	Yes[1]	No	Yes	Yes
2,4-D	Weedar 64®** 2,4-D LV6 Ester®** HI-DEP®** 2,4-D Amine 4**®	71368-1 228-95 2217-703 1381-103	Substations, ROW Substations, ROW Substations, ROW Substations, ROW	No No No No	Yes[1] Yes[1] Yes[1] Yes[1]	Yes Yes Yes Yes	Yes Yes Yes Yes	Yes Yes Yes Yes
Clopyralid and 2,4-D	Curtail®**	62719-48	Substations, ROW; noxious weed control	No				Yes
Dicamba	Vanquish®** Banvel®**	228-397 51036-289	ROW (Stump Treatment), Substations	No No	Yes[1]	Yes	Yes	Yes Yes
Dithiopyr	Dimension Ultra 40®	62719-445	Landscaped Areas	No				Yes
Diuron	Karmex® DF** Diuron 80 DF IVM®	1812-362 62719-310	Substations Substations	No No				Yes Yes
Flumioxazin	Payload®	59639-120	Bareground – Substations, *Kochia* control	No				Yes
Fosamine Ammonium	Krenite® S**	352-395	ROW	No				Yes
Glyphosate	Roundup® PRO** Aquamaster® (aquatic)** Rodeo® (aquatic)**	524-475 524-343	Substations Areas near water, wetlands	No Yes	Yes[1]	Yes	Yes	Yes Yes

Herbicide	Trade Name**	EPA Registration Number	Use	Aquatic	Land Use Application			
					NPS	BLM	USFS	Private Lands
		62719-324	Areas near water, wetlands	Yes	Yes[1]	Yes	Yes	Yes
Imazapyr	Arsenal® (liquid)** Stalker®** Arsenal® 0.5G**	241-346 241-398 34913-23	Substations, ROW Stump Treatment Substations	No No No	Yes[1] Yes[1]	Yes Yes	Yes Yes	Yes Yes Yes
Oxyfluorfen	GoalTender®	62719-447	Landscaped Sites – Bareground Control	No	Yes[1]	Yes	Yes	Yes
Sulfometuron Methyl	Oust® XP**	352-601	Storage Yards, Subs	No	Yes[1]	Yes	Yes	Yes
Sulfometuron Methyl and Chlorsulfuron	Landmark® MP®	352-621	Bareground - Substations	No				Yes
Tebuthiuron and Diuron	Sprakil SR-13®*8	34913-15	Substations	No				Yes
Mefluidide	Embark® 2S** (Plant growth regulator)	2217-759	Buffers, around subs. (on grass)	No				Yes
Imazapyr and Diuron	Topsite 2.5G®** Sahara DG®**	34913-22 241-372	Substations, some ROW Substations	No No				Yes Yes
Tebuthiuron	Spike® 80DF**	62719-107	Substations	No				Yes
Triclopyr	Garlon 3A®** Garlon 4®*8 Garlon 4 Ultra® Pathfinder ®**	62719-37 62719-40 62719-527 62719-176	ROW Stump Treatment	Yes No No No	Yes[1] Yes[1] Yes[1]	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes Yes
Pendamethalin	Pendulum WDG®	241-340	Substations	No				Yes
Oryzalin	Surflan A.S. ®	70506-44-829	Substations	No				Yes
Fluroxypyr	Vista®	62719-308	ROW, Substation esp. for Kochia	No				Yes
Paclobutrazol	Profile 2SC® (Tree growth regulator)	67690-22	ROW (sensitive areas) Substations	No				Yes

Herbicide	Trade Name**	EPA Registration Number	Use	Aquatic	Land Use Application			
					NPS	BLM	USFS	Private Lands
			(screens)					
Trifluralin	Biobarrier® Biobarrier II®	59823-1 59823-3	Substations, yards	No				Yes

1 NPS does not pre-approve herbicides. On an annual basis, Western shall submit to the NPS regional office an application with intended herbicides and amounts, and identify target species and locations. NPS shall enter the request into the Pesticide Use Proposal system and track its approval process.

Appendix C

Noxious Weed Management

APPENDIX C NOXIOUS WEED MANAGEMENT

Summary

Western has prepared an Integrated Vegetation Management Guide and Transmission Vegetation Management Program Report (IVM) (February 2007). This document presents Western's vegetation management program. Section 11 of the report is contained in this appendix. It provides a detailed approach to noxious weed management and includes descriptions (Figures 11-1A to 11-1P) and general treatment information (Table 11-1) for selected noxious weeds. For up-to-date listings of weeds being introduced and spread in California, Western will consult resources provided by the California Invasive Plant Council (www.cal-ipc.org).

11.1 INTRODUCTION

Western's historical vegetation management activities have been restricted primarily to the control of vegetation which poses a fire or safety hazard to transmission facilities. The existing vegetation management control program has now been expanded to be more proactive, with active management toward the desired condition of a low growth community on the right-of-way, as well as the control of noxious or undesirable weeds. The following sections describe Western's Noxious Weed Management Policy and its implementation during all stages of construction and maintenance activities.

11.2 BACKGROUND

Virtually all noxious weed species are non-native plants that have found ideal growing environments in North America. In their native habitats, insects, competing organisms, and soil and moisture conditions combine to keep these weeds in check. But in the western United States, an ideal environment, coupled with the species' prolific reproductive capabilities (seed production) and the lack of natural predators, have allowed noxious weeds to become established and to spread rapidly on both public and private rangeland and farmland. Furthermore, disturbance from human activities and development may enhance the probability of non-native plant establishment. However, few strategies for minimizing the spread of non-native species exist. As a result, crop yields and wildlife habitat are being reduced, livestock is poisoned, native plants are displaced, and rangeland in good ecological condition is being invaded. The threat to biological diversity and native ecosystems is a critical issue to most parks.

There are several internet sites with useful information on noxious weeds. A selection of these is provided in Appendix H of WAPA's Integrated Vegetation Management Guide and Transmission Vegetation Management Program (IVM), 2007.

11.3 FEDERAL, STATE AND COUNTY LAWS/REGULATIONS

The Federal Noxious Weed Act of 1974, as amended by Sec. 15, Management of Undesirable Plants on Federal Lands, 1990, mandates each Federal land management agency to:

1. Designate a lead office and person trained in the management of undesirable plant species
2. Establish and fund an undesirable plant management program
3. Complete and implement cooperative agreements with State agencies
4. Establish integrated management systems to control undesirable plant species

Federal agencies responsible for the management of public lands have established an interagency committee which agreed to work cooperatively to manage noxious weeds, increase public awareness, support further research, and provide technical assistance on private lands to accomplish an integrated approach to the management of noxious weeds. All Federal land management agencies have a designated weed coordinator or similar position, which can be found on the agency websites.

Western's General Counsel has concluded that language in the act requires Western to take action on lands we own and have jurisdiction over, including easements and rights-of-way. Additionally, the Department of Energy's (DOE) Office of Environmental Guidance has instructed Western to comply with all Federal and State mandates to control undesirable weeds.

Within Western's service area, all states except Texas have passed laws that address noxious weed management and have developed State noxious weed lists (see Appendix B of IVM 2007- State Noxious Weed Lists). Additionally, the majority of State weed management laws allow the governing body of a weed management district (usually the county) to designate additional undesirable plants for management within its jurisdiction. For example, in 1990 the Colorado Legislature passed the Colorado Undesirable Plant Management Act (HB 1175) requiring county governments to develop integrated weed management plans that would include Federal agency involvement in controlling specific weeds in Colorado. Therefore, **be sure to check with the appropriate County agency** (usually a Weed Management Board) for county-specific requirements.

11.4 FEE-OWNED VERSUS NON-FEE-OWNED LANDS

Western's land management and rights administration fall within two general areas; fee-owned/withdrawn and non-fee-owned (easements, rights-of-way, permits, etc.). Weed management practices, responsibilities, and liabilities for these two situations are quite different. In the fee-owned/withdrawn situation, Western is the property owner/administrator and must assume the burden of full compliance with the weed laws. In the non-fee-owned situation, Western must defer to the landowner or administrator as the responsible party for compliance with Federal and State laws, while ensuring that any actions taken are not detrimental to the rights held by Western.

Implementation of Western's noxious weed policy should be prioritized according to Western's vested interest in the land. First priority for noxious weed control should be on those lands owned by Western in fee. Second priority for control of noxious weeds should be on non-fee-owned Federal lands where transmission facilities either cross or occupy Federal land and where noxious weed infestations occur within permitted areas. Third priority for control of noxious weeds should be on or across non-Federal government lands.

The following sections are proposed guidelines for Western weed management involvement under the two general areas described above.

11.4.1 Western Fee-Owned/Withdrawn Property

Western shall be responsible for the inventory, treatment, and control of those weed species identified by State and/or county noxious weed laws. While current weed control practices generally involve the eradication of all vegetation within controlled sites, such as substations, other fee-owned property, such as buffer zones, receive minimal weed management effort. Given Western's responsible and liability under the Federal law, Western has looked to State law for coordination and compliance requirements, including the identification of target undesirable plants. Western shall be responsible for the inventory, treatment, and control of those weed species identified by State and/or county noxious weed laws. Where necessary, the Western Regional Office will notify the County Agent or County Board of Western's weed management activities.

Where chemical (herbicide) control is carried out by Western personnel, all spray crew personnel should be familiar with the identification of noxious weed species targeted for management by the state/county. Figures 11-1A through 11-1P provide photos of some common noxious weed species. After targeted weed species are identified, Western-

approved herbicides can be selectively applied to remove the undesirable species, while maintaining and encouraging the development of desirable shrubs and grasses. Table 11-1 lists the most common noxious weeds expected to be encountered in Western's service area and the herbicides recommended for each weed. For problem weed infestations such as Canada and musk thistle, knapweeds, and ragweeds outside the substation or yard, the herbicide Transline® provides excellent control. The active ingredient is clopyralid. It is registered for selective control of broadleaf weeds in non-cropland areas, industrial manufacturing and storage sites and rights-of-way. By removing only unwanted weeds and brush, Transline® allows grass to live, thus preserving a grassy ground cover which prevents erosion.

Where vegetation management activities on Western fee-owned land involve contractor application of herbicides, language in statements of work should instruct the contractor to not only control weed growth within the security fence, but also to selectively control the growth of state/county targeted weed species on nearby Western fee-owned land. These fee-owned lands generally include substations and buffer zones, access roads, and electric transmission line approaches.

Noxious Weeds

SCOTCH THISTLE *(Onopordum acanthium)*

(Source: The British Columbia Ministry of Agriculture and Food)

GROWTH HABIT: Biennial, sometimes annual, erect, up to 8 ft. tall. **Rosette formed first year, flowering stem elongates second year**.

LEAVES: Large, coarsely lobed, **hairy on both sides, velvety gray appearance**. Margins lined with sharp conspicuous spines. Basal leaves up to 2 ft. long and 1 ft. wide.

STEMS: Erect, branching, **spiny leaf wings extend down onto stem**, covered with dense fine hairs.

FLOWER: Solitary, terminal, 1 to 2 inches in diameter violet to reddish colored. Bracts spine tipped.

ROOTS: **Large fleshy taproot**.

SEEDS: Deep brown to black, distinctly wrinkled, 3/16 in. long.

OTHER: **Reproduce by seed only**. Dense stands may be impenetrable to livestock.

FIG. 11-1A

Noxious Weeds

DIFFUSE KNAPWEED *(Centaurea diffusa)*

(Source: The British Columbia Ministry of Agriculture and Food)

Bolting plant

GROWTH HABIT: Annual or biennial, bushy, up to 2 ft. tall. **Rosette formed first year flowering stalk elongates second year**.

LEAVES: **Greyish-green**, alternate, basal leaves whorled, **upper leaves much reduced. Covered with fine hair**.

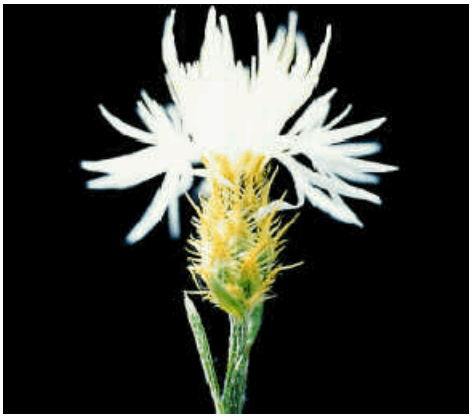
STEM: **Hairy**, erect, **single main stem** from a rootstock, branched near or above the base.

FLOWER: Solitary, usually white, sometimes pink, rose or lavender; **seedhead bracts end as sharp, rigid spines**.

ROOTS: Elongated taproot.

SEEDS: Oblong, dark brown or grey with **longitudinal lines**.

OTHER: May seriously reduce productive potential of infested rangelands.



Rigid spines on tips of flower bracts

FIG. 11-1B

Noxious Weeds
MUSK THISTLE *(Carduus nutans)*
(Source: The British Columbia Ministry of Agriculture and Food)

Large flowers with spine-tipped bracts "nod" at maturity

GROWTH HABIT: Biennial, or winter annual, erect up to 7' tall. Freely branching. **Rosette formed 1st year, flowering stem elongates 2nd year**.

LEAVES: **Dark green with light midrib, hairless on both sides**, long sharp spines.

STEM: **Hairless**.

FLOWER: Solitary, terminal, **nodding heads 1 1/2" to 3" diameter, deep rose to violet to purple**.

ROOTS: Fleshy **tap root**, hollow near ground surface.

SEEDS: Can be in excess of 20,000 per plan with 90% viable. Ninety percent may germinate in first 2 years. Seeds may germinate after 10 years in soil.

OTHER: **Reproduce by seed only**.

FIG. 11-1C

Noxious Weeds
HOARY CRESS *(Cardaria draba)*
(Source: The British Columbia Ministry of Agriculture and Food)

Heart-shaped seedpods

"White-top" infestation

GROWTH HABIT: Perennial herb, up to 24" tall, erect, **becoming lodged with age**.

LEAVES: Alternate, lance-shaped and slightly irregular, **greyish-green, base of upper leaves clasping stem**.

STEMS: Stoutish, branched toward top.

FLOWERS: Small, white, 4 petals; numerous flower branches and dense flowers give plant a **dense, white, flat-topped appearance**. Numerous white flowers produced at the top of the plant gives rise to its other common name of "white-top".

ROOTS: **Extensive** horizontally and vertically **frequent shoots arising from root stocks**.

SEEDS: Reddish-brown, granular, egg-shaped, contained in heart-shaped pods.

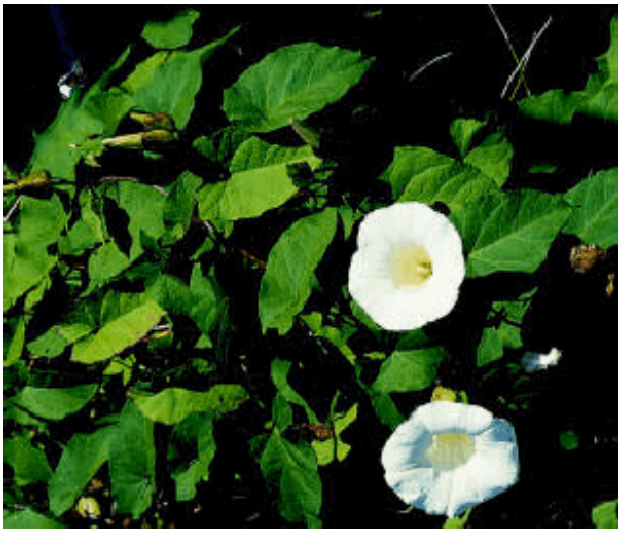
OTHER: **Flowers early** (April and May), **reproduces by seeds, root stocks and creeping roots**.

FIG. 11-1D

Noxious Weeds

FIELD BINDWEED *(Convolvulus arvensis)*

(Source: The British Columbia Ministry of Agriculture and Food)



GROWTH HABIT: Perennial **vine**, reproducing from seeds and roots.

LEAVES: Alternate, simple, **arrowhead-shaped, rounded or blunt tipped**.

STEM: **Prostrate, twining and mat-forming**, up to 10 ft. long.

FLOWER: **Funnel-shaped**, pale pink to white, up to 1 in. wide; **two small scale-like bracts** attached below flower on flower stem.

ROOTS: **Creeping rhizomes**, extensive.

SEEDS: Four per capsule, dark grey to reddish brown, three sided.

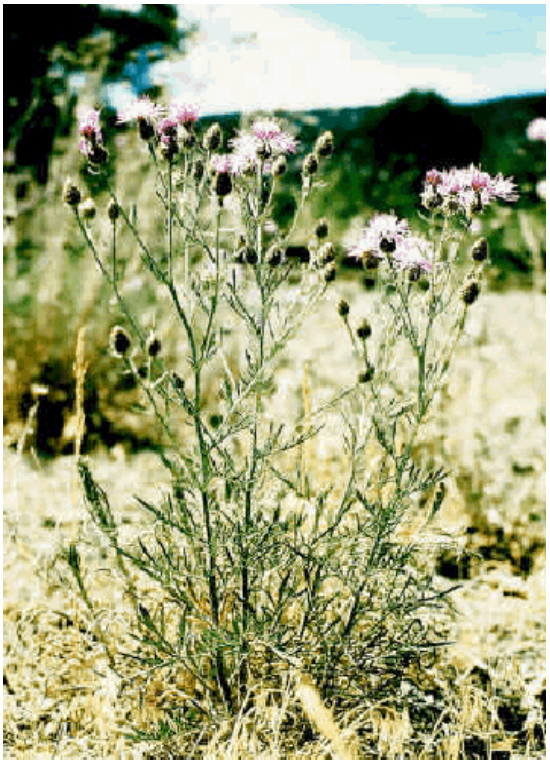
OTHER: Seeds viable over 60 years. **Often confused with wild buckwheat which has heart-shaped sharp pointed leaves and tiny inconspicuous flowers**.

FIG. 11-1E

Noxious Weeds

SPOTTED KNAPWEED *(Centaurea maculosa)*

(Source: The British Columbia Ministry of Agriculture and Food)



Flowerhead bracts with black-tipped fringe giving head a "spotted" appearance

GROWTH HABIT: Biennial or short lived perennial, up to 3 ft. tall. **Rosette formed first year flowering stalk elongates second year**.

LEAVES: Long and divided below, **short and narrow above. Covered with fine hair**.

STEM: Erect with slender wiry branches. **Covered with fine hair**.

FLOWER: Seed heads mostly on branch tips solitary, to 1" diameter. **Pink to purple, rarely white. Seed head bracts are black tipped**, with 5 to 7 pairs of short feathery appendages.

ROOTS: Taproot not well developed.

SEEDS: Brownish, 1/8" long, notched on one side of base, short tuft of bristles at tip end.

OTHER: Very aggressive, can infest large areas quickly, offers very little big game or livestock forage value.

FIG. 11-1F

Noxious Weeds

PLUMELESS THISTLE *(Carduus acanthoides)*

(Source: The British Columbia Ministry of Agriculture and Food)

Spiny winged stems

GROWTH HABIT: Biennial, sometimes annual, erect, up to 8 ft. tall. **Rosette formed first year, flowering stem elongates second year**.

LEAVES: **Dark green with a light midrib, hair only on the underside, leaf margin with sharp spines**.

STEMS: To 4 ft. tall, erect, **winged to flowering heads**.

FLOWER: Solitary, terminal or clusters of 2 to 5. Narrow seedhead bracts spine tipped. **Reddish-purple blooms 1/2 to 1 inch diameter**.

ROOTS: Stout fleshy taproot.

SEEDS: Striped lengthwise, slightly curved, with a protrusion at one end.

OTHER: **Reproduce by seed only**.

FIG. 11-1G

Noxious Weeds

RUSSIAN THISTLE *(Salsola kali)*

(Source: The British Columbia Ministry of Agriculture and Food)

Spine-tipped leaves

Seedling

GROWTH HABIT: Annual which reproduces by seed.

LEAVES: Alternate with the first ones being dark green, soft, slender, and 1 to 2 1/2 inches long. These drop off and later leaves are short, stiff, spiny, with two sharp-pointed bracts at the base.

STEM: Rounded, bushy, much branched, annual growth to 1.2 meters in height; stem usually red or purple striped.

FLOWER: Inconspicuous, green with 2 spiny-tipped stiff bracts.

SEEDS: Can produce over 200,000 seeds per plant.

OTHER: Nicknamed "tumbleweed" when mature plants blow on the wind.

FIG. 11-1H

Noxious Weeds

KOCHIA *(Kochia scoparia)*

(Source: The British Columbia Ministry of Agriculture and Food)

Seedling

Flower clusters

GROWTH HABIT: Annual, erect, up to 6 ft. tall, spreading by seeds.

LEAVES: Narrow, bright green, hairy, numerous and attached directly to the stem. The upper leaves are narrow. Entire margins often turn purple in autumn.

STEM: Erect, round, slender, pale green, much branched. Main stem often tinged with red.

FLOWER: Inconspicuous in the axils of upper leaves.

OTHER: Also called Fireweed or Mexican burning bush.

FIG. 11-1I

Noxious Weeds

CANADA THISTLE *(Cirsium arvense)*

(Source: The British Columbia Ministry of Agriculture and Food)

Flowerheads with spineless bracts

Seedling

Young rosette

GROWTH HABIT: Perennial, erect, up to 4 ft. tall.

LEAVES: Varies from **light to dark green, oblong or lance-shaped**, deeply cut, spiny toothed margins (some may be smooth), slightly hairy below. Tremendous leaf variability.

STEM: Smooth to **slightly hairy**, branched at top.

FLOWER: **Small bristly clusters, 3/8 to 5/8 inch in diameter**, light lavender to deep rose purple. Plants are male or female.

ROOTS: Extensive, fleshy, **creeping root stocks**.

SEEDS: Smooth, light to dark brown, tipped by a cupped conical point, approx. 1/8" long.

OTHER: Reproduces by seed and creeping rootstocks.

FIG. 11-1J

Noxious Weeds

LEAFY SPURGE *(Euphorbia esula)*

(Source: The British Columbia Ministry of Agriculture and Food)

Greenish-yellow flower clusters and bracts

Creeping rootstocks

GROWTH HABIT: Perennial, erect, up to 3 ft. tall, spreading by seed or **creeping roots**.

LEAVES: Alternate, **long**, **narrow**, 1/4" wide and 2" long, usually drooping.

STEMS: Branched near top, hairless, **entire plant contains milky sap**.

FLOWERS: Inconspicuous, surrounded by **large heart-shaped floral leaves** which turn **yellow-green** near maturity.

ROOTS: **Brown, numerous pink buds**, deep spreading, very persistent.

OTHER: Grows in nearly all soil types and habitats. Seed is thrown to 20' by exploding seed capsule. All parts of the plant contain a white milky latex that can irritate skin of livestock and humans.

FIG. 11-1K

Noxious Weeds
DALMATIAN TOADFLAX *(Linaria dalmatica)*
(Source: The British Columbia Ministry of Agriculture and Food)

Snapdragon-like flowers

Waxy leaves clasp the stem

GROWTH HABIT: Perennial, often over 3 ft. tall, erect.

LEAVES: Light green, alternate, **broad, heart-shaped**, clasping the stem.

STEM: Branching, light green, smooth, and **leafy**.

FLOWERS: Snapdragon type, **bright yellow**, tinged with orange, **to 1 1/2" long with long spur**, born in upper leaf axils.

ROOTS: Vigorous, deep and extensive, **creeping roots**.

SEEDS: Numerous, irregularly angled.

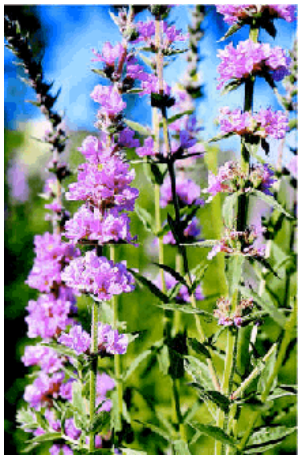
OTHER: Spread by seed and creeping roots. Likely introduced to North America as an ornamental.

FIG. 11-1L

Noxious Weeds

PURPLE LOOSESTRIFE *(Lythrum salicaria)*

(Source: The British Columbia Ministry of Agriculture and Food)



Purple flowers produced on terminal spikes

Seed-bearing spikes

GROWTH HABIT: Wetland perennial, 1 1/2 to 8 ft. tall in height.

LEAVES: Opposite or sometimes whorled stalkless leaves.

STEM: Stiff, four-sided stem.

FLOWERS: Purple flowers in a dense terminal spike.

ROOTS: Woody taproot and branching fibrous root system.

SEEDS: Can produce over 2.5 million seeds annually.

OTHER: Sometimes confused with fireweed *(Epilobium angustifolium)*, many infestations have resulted from escape of ornamental varieties. Highly aggressive invader species. If left unchecked, a wetland will eventually become a monoculture of loosestrife. This plant poses a severe threat to waterfowl habitat.

Fireweed

FIG. 11-1M

Noxious Weeds

RUSSIAN KNAPWEED *(Acroptilon repens)*

(Source: The British Columbia Ministry of Agriculture and Food)

Purple flower with papery margined bracts

Creeping roots produce dense infestations

GROWTH HABIT: Perennial herb, up to 3 ft. tall, erect, may be in dense clumps. Greyish color.

LEAVES: Alternate, simple, of **several types**:
Upper leaves - small, narrow, unbroken edge;
Stem leaves - intermediate in size, slight toothed margins;
Basal leaves - deeply notched.

STEM: Numerous branched, each ending with a single flower.

FLOWER HEAD: Single, **terminal, lavender, thistle-like, scaly seed head**.

ROOTS: **Dark brown to black and heavily scaled**.

SEEDS: Flattened, ivory-colored, **retained in cup-shaped seed heads**.

OTHER: Leaves and stems covered with short stiff hairs giving **plant an appearance of knap**. Spreads by seeds and creeping rootstocks. It is very poisonous to horses.

FIG. 11-1N

Noxious Weeds

YELLOW STARTHISTLE (*Centaurea solstitialis*)

(Source: California Department of Food and Agriculture)

Flower

Infestation

Rosettes

GROWTH HABIT: Annual, sometimes biennial, erect, to 6 feet tall.

LEAVES: Alternate, mostly linear and somewhat narrowly oblong to oblanceolate.

STEM: Stiff, openly branched from rear or above the base. Leaf bases extend down stems, giving a winged appearance.

FLOWER: Heads ovoid, spiny, solitary on step tips, consisting of numerous yellow disk flowers.

ROOTS: Tap roots grow vigorously early in the season to depths of 3 feet or more.

SEEDS: Barrel-shaped, about 2 – 3 mm long, with broad bases; laterally notched at the base.

OTHER: Usually senesces in late summer or early fall.

FIG. 11-1O

Noxious Weeds

SCOTCH BROOM (*Cytisus scoparius*)

(Source: California Department of Food and Agriculture)

Flower

Infestation

Full view of plant

GROWTH HABIT: Shrubs, up to 7 feet tall.

LEAVES: Alternate, compound, 3 leaflets; sometimes single on new twigs. About 5 - 20 mm long, oblong to obviate.

STEM: Erect, dense, green; sharply 5-angled or ridged, and star-shaped in cross section, often with few leaves.

FLOWER: Bright yellow, pea-like, single or paired in leaf axils. Calyx typically less than 5 mm long, 2-lipped, glabrous.

ROOTS: Taproots deep, branched, associated with nitrogen-fixing bacteria.

SEEDS: Pods mature June – July; are dark brown to black, flattened, about 2 - 5 cm long, densely lined with long silky golden to silvery hairs, and contain an average of 5 - 9 seeds.

OTHER: Tolerate frost, but die back after severe cold. Ants attracted to seed appendages and disperse seed while foraging.

FIG. 11-1P

TABLE 11-1 HERBICIDES FOR NOXIOUS WEED CONTROL

This table presents overall treatment information for selected noxious weeds. Refer to Table B-1 in Appendix B for specific information on herbicides planned for use in the O&M Program.

Noxious Weed (Common Name)	Recommended Herbicide(s)	Optimum Treatment Time	Quantity	Notes
Canada Thistle	Vanquish® +2,4-D	End of bud stage or fall	1 quart each/acre	--
	Tordon® +2,4-D		1 quart each/acre	--
	Tordon® +Vanquish®		1 pint each/acre	--
	Curtail® (Clopyralid +2,4-D)	From rosette (6-8 inches) up to pre-bud stage.	2 quarts/acre	--
	Transline®		12-16 ounces/acre	--
	Telar®	Bud to early bloom or fall.	1 ounce/acre	Roadside/non-crop land use
Musk Thistle	Vanquish® +2,4-D	Rosette stage (spring and fall)	1 pint + 1 quart/acre	--
	Tordon® +2,4-D		.5 pint + 1 quart/acre	--
	Tordon® +Vanquish®		.5 pint + 1 pint/acre	--
	Telar®	After bolt up to early flower stage.	1 ounce/acre	--
	Curtail® (Clopyralid +2,4-D)	Rosette (spring or fall) up to pre-bud stage.	2 quarts/acre	--
	Transline®	Rosette stage (spring and fall) to pre-bud stage.	12-16 ounce/acre	--
Leafy Spurge	Tordon® +2,4-D	Spring during true flower stage or fall to regrowth.	1-2 pints + 1 quart/acre	3-4 years consecutive treatment necessary.
	Vanquish® +2,4-D		1-2 quarts + 1 quart/acre	Should combine chemical control with other methods - e.g., chemical or cultural.

Noxious Weed (Common Name)	Recommended Herbicide(s)	Optimum Treatment Time	Quantity	Notes
	Roundup® +2,4-D	Treat 2-3 times/season with first treatment at true flower stage and subsequent treatments at 30 day intervals.	.5-1 pint + 1-2 pints/acre	Use under trees or combine with reseeding of competitive perennial grass.
Russian Knapweed	Tordon® +2,4-D	Bud Stage or fall.	1 quart each/acre	--
	Vanquish® +2,4-D		1-2 quarts + 1 quart/acre	--
	Curtail® (Clopyralid +2,4-D)	Rosette to early flower.	3 quarts/acre	--
	Transline®		18-24 ounces/acre	--
	Telar®	Fall.	1 ounce/acre	--
Diffuse and Spotted Knapweed	Tordon®	Rosette to early bolt.	1 pint/acre	--
	Tordon® +2,4-D		12 ounces + 1 quart/acre	--
	Tordon® + Vanquish®		.5-1 pint +1-2 pints/acre	--
	Vanquish® +2,4-D		1 pint + 1 quart/acre	--
	Curtail® (Clopyralid +2,4-D)		2 quarts/acre	--
Field Bindweed	Vanquish® +2,4-D	During flower stage or fall.	1 quart each/acre	--
	Tordon® +2,4-D		1 quart each/acre	--
	Tordon® +Vanquish®		1 pint each/acre	--
Hoary Cress (Whitetop)	Telar®	Bud to early bloom stage.	.5-1 ounce/acre	Roadside/noncropland
			.5-.75 ounce/acre	Range/pasture

Noxious Weed (Common Name)	Recommended Herbicide(s)	Optimum Treatment Time	Quantity	Notes
	2,4-D amine	Apply first treatment at early bloom stage, second treatment at mid summer (July), and third treatment to any fall regrowth.	2-3 quarts/acre	--
Perennial Pepperweed (Tall Whitetop)	Telar®	Bud to early bloom stage and fall rosette.	1 ounce/acre	Roadside/noncropland
	2,4-D amine	Apply first treatment at early bloom stage, second treatment at mid summer (July), and third treatment to any fall regrowth.	2-3 quarts/acre	--
Yellow and Dalmation Toadflax	Tordon®	Bud to early bloom.	1-2 quarts/acre	When using 1 quart/acre treat for 2-3 conservative years
Kochia	Vista®	Apply to actively growing weeds.	2/3 - 1 1/2 pt/ac	--
Yellow Starthistle	Transline®	Apply from rosette to mid-bolt growth stage.	½ - 1 pint/acre	--
	Roundup®	Apply when actively growing.	1 pound AI/acre	--
	HI-DEP®	Apply to rosette.	1-2 pounds AI/acre if late in season	--

Sources: Colorado Weed Management Association, Dow, and UC Davis website

Western's completed and approved vegetation management guidance can be used as a vehicle for entering into good neighbor Weed Management Plans, when necessary, with Federal, State, or local government entities. This practice will help to ensure consistency throughout Western. The vegetation management guidance includes any or all of the following:

- Site Specific Weed Inventories
- Integrated Approaches for Control
    - Mechanical Control (Manual, Mowing)
    - Biological Control (Introduce Natural Insect Predators, Grazing)
    - Chemical Control (Herbicides, Fertilizers)
- Environmental Protection Requirements and Best Management Practices
- Herbicide Application Certification Requirements
- New Vegetation Control Methods Procedures
- Monitoring and Reporting Procedures

11.4.2 Western Non-fee-Owned Rights

The administration of Western's rights on other than fee-owned land is difficult to assess in terms of responsibility and liability, especially where weed control is at issue. As stated in the assumptions above and pertaining to weed management responsibility, Western will defer compliance with Federal and State weed control laws and regulations to the landowner or administrator. There is a potential liability issue associated with this assumption in terms of "cause and effect". Weed occurrences may have resulted from or may have been accelerated by construction activities associated with transmission line and related facilities installations. Given the relationship of Western as a right-holder on the land and the fact that it is in Western's best interest to develop a good neighbor policy, Western would provide funding support, where deemed appropriate and where funds are made available, to the government entity responsible for compliance with the Federal and State laws.

The following subsections provide a breakdown of Western's activities involving the various landowner/administrator situations.

Rights On or Across Federal Lands

Western is responsible for the development of Interagency Agreements (IA) which includes the management of noxious weeds (see Section 2.4 of IVM 2007). Where there are active county-wide weed management programs, Western will advise the county of its ongoing efforts with other Federal agencies and will support the integration of such efforts when in the best interest of the government to do so.

IAs will be developed with the Federal agency with surface administration jurisdiction, where necessary. As in the case of BLM, an environmental impact statement was finalized in 1991 that specifies their weed control commitment in the Western States, excluding California. BLM assumes the responsibility of weed management planning and implementation on all lands within their administration. If necessary, Western may execute an IA providing for funding support given Western's right-of-way and Western's acceptance of the estimate and availability of funds.

The Colorado River Storage Project Office and the CSO - Office of Environment developed IAs with Colorado western slope Forest Service District Offices in 1994 and 1995. These agreements can serve as examples for other State weed control activities, where necessary.

Executed IAs will be forwarded to the specific County Agent or Board, when applicable, to ensure coordination and as an effort to demonstrate Western's good intentions toward controlling specific weed problems.

Rights On or Across Non-Federal Government Entities (State or Local)

Cooperative agreements will be developed with State or local government entities with surface administration jurisdiction, where necessary. These government entities are responsible for compliance with State laws, as well as the EPA regulations concerning the application of herbicides. The entity would provide Western with a plan and, after approval and availability of funds, Western will direct transfer of funds to the designated representative. Copies of executed cooperative agreements will be forwarded to the County Agent or Board for coordination purposes, where applicable.

Rights On or Across Private-owned Lands

Cooperative agreements will be developed with County Agents or Boards in those counties where weed management plans have been implemented and where private lands containing Western facilities and their associated rights are within identified weed control areas. The County Agent or Board would be responsible for the inventory and identification of targeted undesirable plants or private lands and the corresponding Western easement. Where Western concurs with the findings and recommendation for control, including cost estimates, funding may then be directed to the respective county representative. Direct coordination with the landowner is not recommended due to the requirements for compliance with State law and EPA regulations. Payments to landowners who are not certified or trained in herbicide application are, in themselves, a liability concern.

11.5 BEST MANAGEMENT PRACTICES FOR NOXIOUS WEED MANAGEMENT

Best Management Practices (BMPs) for weed control will be used to reduce the spread of noxious weed and to increase the effectiveness of treatment. The following lists BMPs that should be considered for use within Western's service area:

- Learn how to identify high-priority weed species. Identification is the first step-know your weeds!
- Report new infestations to the appropriate resource manager.
- Treat intensely when a new or small patch is found; monitor the site periodically and repeat physical removal of the weed or treat with herbicides.
- Inspect roads before maintenance to prevent the spread of weeds by vehicles or equipment.
- Inspect bare soil or disturbed sites frequently for weeds.
- Understand the biology of the weed, including the growth stage, to identify the best and most effective management practices.
- Use seed, hay, and mulch that are certified weed-free.
- Avoid the introduction of ornamental flowers that are on State or county invasive species lists.

- Re-seed areas immediately after disturbance with an appropriate mix of native, competitive species.
- Avoid transporting weed seeds on clothing, vehicles, and equipment.
- Avoid driving in noxious weed infested areas with your vehicle and then traveling to unaffected areas; restrict travel to established roads and trails. .
- Whenever possible, clean all construction and maintenance equipment before moving between sites.

Drought causes plants to shut down their growth process. Spraying weeds during dry periods is not recommended because effectiveness is greatly reduced. Treat after rainfall if the weed is still in the proper growth stage for control.

Not all herbicides work equally on all weeds nor can every herbicide be used in every situation. Read the label, use the information provided in this manual, and consult weed experts and manuals for the most effective treatment method and chemical.

Appendix D

Habitat Descriptions

APPENDIX D HABITAT DESCRIPTIONS

Habitat Types Present in the Project Area

Agriculture, rice (Agri); rice fields, note if flooded or fallow
Agriculture, orchard (Agor); fruit trees, note type if can
Agriculture, pasture (Agps); note if irrigated
Agriculture, grain (Aggr) alfalfa, hay; note if irrigated
Agriculture, vineyard (Agvn); grapes, kiwi
Agriculture, row crop (Agrc); tomatoes, root crops, safflower, etc.; note type if can
Agriculture, nursery/garden (Agga); note type

Barren (Bar); rock, pavement, sand, etc**.**

Chaparral, mixed (Cmi); shrub dominant, chamise, buckthorn, poison oak, fremontia, toyon; <5,000'
Chaparral, montane (Cmo); mostly evergreen shrub, manzanita, ceanothus, chinquapin; 3,000-10,000'
Chaparral, oak (Coa); dense, tall, live/blue oak, manzanita, toyon, buckbrush, poison oak; Sierra foothills

Commercial, industrial (Com); developed land use other than residential or farms

Elderberry, isolated (Ebis); elderberry shrub not in savanna setting
Elderberry, savanna (Ebsv); note elderberry savanna boundary and associated dominant plants

Forest, Douglas fir (Fdf);tall evergreen Doug fir w/tanoak, madrone, pines, black oak; 1,000-4,000'
Forest, Klamath mixed conifer (Fkm); evergreen trees w/shrubs; firs and pines, Klamath region
Forest, mixed conifer (Fmc); firs and pines, cedar, chinquapin, currant, snowberry; 2,000-6,500'
Forest, ponderosa pine (Fpp); >50% ponderosa pine, cedar, fir, blk oak, live oak, tanoak;800-5,000'
Forest, white fir (Fwf); white fir dominant, live oak, chinquapin, squawcarpet; 4,500-5,000'

Golf (Glf); golf course

Grasslands, non-native annual/ naturalized (Gnn); soft chess, wild oats, ripgut, ryegrass;<3,000'
Grasslands, native perennial (Gnp); soft chess, orchardgrass, oatgrass, fescue, hairgrass

Gully (Gully); gully in access road, note if repairs needed

Levee (Lev); man-made levee structure

Meadow, other (Mot); seasonally dry swales, ann. grasses, forbes, some meadow species when wet
Meadow, wet montane (Mwm); herbaceous, sedges, rushes, corn lily, clover; >3,940'

Other (Oth); describe habitat type with dominant species

Park (Prk); maintained public park

Riparian, Great Valley forest (Rgf); valley oak, blk walnut, sycamore, cottonwood, elderberry;<500'
Riparian, Great Valley scrub (Rgs); willows, elderberry, verbena, blackberry; <1,000'
Riparian, montane aspen (Rma); Aspen, willows, alders, cottonwood, aspen, pines; 6,500-9,850'
Riparian, montane scrub (Rms); willows, alder, dogwood, near montane meadows; <8,000'
Riparian, montane white alder (Rmw); white alder, maple, ash, bay, willow, cottonwood;<6,000'

Scrub, sagebrush bitterbrush (Ssb); big sagebrush/bitterbrush, ponderosa, juniper; 1,600-10,500'

Urban (Urb); lawns, trees, backyard

Waters, creek, intermittent (Waci); intermittent creek, < 20 feet wide
Waters, creek, perennial (Wacp); continually flowing, < 20 feet wide
Waters, pond (Wapd); small, <6' deep
Waters, lake (Walk); large, > 6' deep
Waters, river (Warv); perennial/intermittent, > 20 feet wide
Waters, seep/spring (Wasp); note origin
Waters, impoundment (Waim); stock pond, man-made ponding feature
Waters, drainage (Wadr); ditches, agriculture drainages (usually well vegetated and shallow)
Waters, irrigation canal (Waic); flooded up to supply irrigation water to fields, usually deeper
Waters, other (Waot); culvert/pipe, other waters not classified (note type)

Wetlands, freshwater marsh (Wfm); perennial sedge, rushes, nutgrass, cattail, bulrush; <7,500'
Wetlands, other (Wot); wetland not classified in other categories
Wetlands, **seasonal (Wse);** seasonal ponding, ryegrass, barley, curly dock, rushes, eleocharis
Wetlands, vernal pool isolated (Wvpi); seasonal ponding, coyote thistle, popcorn flwr, downingia, toadrush, goldfields, typically with colorful, concentric rings

Woodland, black oak (Wbla); black oak, ponderosa, cedar, live oak, manzanita; 200-8,000'
Woodland, blue oak (Wblu); blue oak, foothill pine, valley grassland understory; <3,000-4,000'

Woodland, foothill pine-chapparal (Wfp); foothill pine, blue oak, buckeye, ridges and canyons
Woodland, live oak (Wlo); live oak, foothill pine, toyon, buckbrush, coffeeberry, foothills <2,000'

Appendix E

Culvert and Drainage Dip Descriptions

Appendix F

Additional O&M Requirements and Information

Project Operation and Maintenance Agreement

CALIFORNIA-OREGON TRANSMISSION PROJECT
OPERATION AND MAINTENANCE AGREEMENT

MARCH 1993

CALIFORNIA-OREGON TRANSMISSION PROJECT

OPERATION AND MAINTENANCE AGREEMENT

TABLE OF CONTENTS

SECTION		PAGE
1.	PARTIES	1
2.	PURPOSE	1
3.	AGREEMENT	1
4.	DEFINITIONS	1
5.	EFFECTIVE DATE, TERM, AND TERMINATION	8
6.	OPERATION AND MAINTENANCE WORK	9
7.	OPERATION AND MAINTENANCE BUDGET AND WORK PLAN	23
8.	COSTS OF OPERATION AND MAINTENANCE WORK	25
9.	REPORTS	27
10.	BILLING AND PAYMENTS	29
11.	AUDITS	31
12.	INSURANCE	33
13.	ACCESS TO PROJECT INFORMATION AND RECORDS RETENTION	33
14.	ASSIGNMENTS	35
15.	OBLIGATIONS AND RELATIONSHIP OF THE PARTIES	35
16.	INTEGRATION	36
17.	LIABILITY	37
18.	RESOLUTION OF DISPUTES	37
19.	UNCONTROLLABLE FORCE	39
20.	SEVERABILITY	39
21.	WAIVER	40
22.	NO DEDICATION OF FACILITIES	40
23.	NO PRECEDENTS	40

24. NO THIRD PARTY BENEFICIARIES 40
25. GOVERNING LAW 40
26. GENERAL CONTRACTING PROVISIONS 40
27. TITLES 42
28. NOTICES 42
29. AMENDMENTS 42
30. SUCCESSORS IN INTEREST 43
31. SIGNATURE CLAUSE 43
APPENDIX A PROCEDURES FOR CURTAILMENT NOTIFICATION A-1
APPENDIX B MAINTENANCE PROGRAM AND SPARE PARTS GUIDELINES B-1
APPENDIX C OPERATIONS GUIDELINES C-1
APPENDIX D ADMINISTRATIVE, GENERAL, AND OVERHEAD EXPENSES D-1
APPENDIX E COST SHARING PERCENTAGES E-1
APPENDIX F ADDRESSES FOR NOTICES F-1

CALIFORNIA-OREGON TRANSMISSION PROJECT
OPERATION AND MAINTENANCE AGREEMENT

1. PARTIES

For purposes of this Agreement, the Parties to this Agreement are the signatories to this Agreement and may include: the Transmission Agency of Northern California (Agency), a Joint Powers Agency; the Western Area Power Administration (Western); the City of Vernon (Vernon), a municipal corporation of the State of California; the Southern San Joaquin Valley Power Authority (Southern San Joaquin), a Joint Powers Agency; Shasta Dam Area Public Utility District (Shasta); Carmichael Water District (Carmichael); San Juan Suburban Water District (San Juan); and the California Department of Water Resources (DWR).

2. PURPOSE

This Agreement more specifically provides for the conduct and payment for the operation and maintenance of the Project as generally set forth in the LTPA. At the time of the negotiations of this POMA, the LTPA has not become effective, but the Management Committee has approved the LTPA with less than unanimous approval. If the LTPA becomes effective and there are any inconsistencies between this Agreement and the LTPA, this Agreement shall control unless the LTPA specifically references a section of this Agreement and states that the LTPA controls as to that section. If the LTPA does not become effective, this Agreement shall remain in effect until terminated by agreement of the Parties or until the Operating Agent resigns pursuant to Section 6.1.1.

3. AGREEMENT

In consideration of the mutual covenants and conditions herein, the Parties agree as follows.

4. DEFINITIONS

Whenever used in this Agreement, the following terms, when initially capitalized, shall have the following meanings. The singular of any definition shall include the plural and

the plural shall include the singular. Capitalized terms which appear only in this Section 4 are not defined here, but shall have the same meanings as those defined and used in the IPA or the LTPA, whichever is effective.

4.1 Addition

A new facility, together with its associated Land Rights, other than a Betterment or Replacement, that is added to the Project.

4.2 Available COTP Transfer Capability

The maximum Transfer Capabilities of the Project and of its Segments, available under operating conditions existing at a given time.

4.3 Capital Improvement

Any Addition or Replacement the cost of which exceeds two hundred fifty thousand dollars ($250,000) or such other amount which the Management Committee may establish from time to time, or a Betterment.

4.4 Capital Improvement Costs

The costs of Capital Improvement Work.

4.5 Capital Improvement Work

All activities, authorized or ratified by the Management Committee, necessary or useful for the planning, engineering, acquisition, installation, and testing of a Capital Improvement.

4.6 Commercial Operation Dates

The dates established by the Management Committee upon which the Project or a Segment thereof is available for commercial use.

4.7 Communication Facilities

Those Land Rights, equipment, and facilities included in Project Work, necessary and useful to monitor the status and to maintain control of the Project's operation, including microwave communication repeaters and repeater sites.

4.8 Cost Sharing Percentage

Those percentages which reflect each Participant's obligation to pay Project Costs.

4.9 COTP

The California-Oregon Transmission Project (Project).

4.10 Curtailment

A temporary reduction in a power schedule due to a temporary reduction in Transfer Capability.

4.11 CVP Upgrade Segment

The 500-kV AC transmission line between the Olinda Substation and the Tracy Substation Expansion.

4.12 EIS/EIR

The final Environmental Impact Statement/Environmental Impact Report for the California-Oregon Transmission Project and the Los Banos-Gates Transmission Project, (EIS/EIR); DOE/EIS-0128, SCH#.85040914, January 1988.

4.13 Electric System

All properties and assets that are owned by any entity, including any interests in Joint Powers Agency facilities, and that are used for or pertain to the generation, transmission, transformation, distribution or sale of electric power and energy, including all additions, replacements, extensions, expansions, improvements, and betterments thereto, and equipment associated therewith. To the extent an entity is not the sole owner of an asset or property, only that entity's ownership interest in such asset or property shall be considered to be part of its Electric System.

4.14 Engineering & Operations Committee (E&O Committee)

A committee operating under the direction of the Management Committee which provides a technical forum among the Participants.

4.15 Entitlement

A Participant's right to use its portion of the Rated COTP Transfer Capability, expressed as a percent.

4.16 FERC

The Federal Energy Regulatory Commission, or its regulatory successor.

4.17 Interest Charge

That charge against unpaid amounts due and owing, assessed at an annual interest rate compounded monthly equal to the lesser of the following amounts: two percent (2%) plus the applicable first of the month reference rate of the Bank of America N.T. & S.A., San Francisco, California, or its successor, corresponding to the period during which the payment is overdue; or the maximum interest rate permitted by law.

4.18 Interim Participation Agreement (IPA)

That agreement among the Participants dated September 30, 1991.

4.19 Investor-Owned Utilities

The Pacific Gas and Electric Company, the Southern California Edison Company, and the San Diego Gas & Electric Company.

4.20 Joint Powers Agency

A public entity organized under the provisions relating to the joint exercise of powers contained in Chapter 5, Division 7, Title 1 of the Government Code of the State of California, as it may be amended from time to time.

4.21 Long-Term Participation Agreement (LTPA)

The California-Oregon Transmission Project long-term participation agreement among the Participants, which supersedes the IPA upon execution of the LTPA by all the Parties.

4.22 Management Committee

The committee established by the IPA or LTPA, whichever is effective, for the purpose of securing effective managerial and policy direction, cooperation, and interchange of information, and of providing decisions and consultation, on a prompt and orderly basis among the Participants, in connection with the Project.

4.23 Maxwell Compensation Station

The 500-kV AC series compensation station located near Maxwell, California.

4.24 Northern Segment

The 500-kV AC transmission line from the Captain Jack Substation located near the California-Oregon border to the Olinda Substation located near Redding, California.

4.25 Olinda Substation

The 500/230-kV AC substation located near Redding, California.

4.26 Operating Agent

The entity selected by the Participants or the Management Committee to perform the duties of the Operating Agent in accordance with this Agreement.

4.27 Operating Emergency

An unanticipated and unplanned event or circumstance which exists or poses an imminent threat to the System, the Project, or the Pacific AC Intertie, and which impairs or threatens to impair the safe and reliable operation of the System, the Project, or the Pacific AC Intertie, provided, that none of the following shall be considered an Operating Emergency: insufficient prime-mover energy source, scheduled maintenance, uneconomic dispatch of energy resources, or a contractual dispute.

4.28 Operation and Maintenance Budget and Work Plan

A projection of Operation and Maintenance Work and Operation and Maintenance Costs.

4.29 Operation and Maintenance Costs

The costs of Operation and Maintenance Work.

4.30 Operation and Maintenance Work

All activities, authorized in an Operation and Maintenance Budget and Work Plan, or approved or ratified by the Management Committee, and which are necessary or useful for the safe, reliable, coordinated operation and maintenance of the Project.

4.31 Pacific AC Intertie

That portion of the two (2) 500-kV AC transmission lines from and including the Malin Substation near the California-Oregon border and to and including the Midway

Substation near Bakersfield, California.

4.32 Participant

For purposes of this Agreement only, an entity which has Entitlement in the COTP.

4.33 Project

The California-Oregon Transmission Project which consists of Land Rights, transmission lines, substations, and related facilities, including, but not limited to, the following major elements plus all Replacements, Additions, and Betterments: Northern Segment, Olinda Substation, CVP Upgrade Segment, Maxwell Compensation Station, Tracy Substation Expansion, Tesla By-Pass Segment, metering, and Communication Facilities.

4.34 Project Agreements

The Interim Participation Agreement (IPA); the Long-Term Participation Agreement (LTPA); this Agreement; a Western interconnection agreement; the Interim Northwest Interconnection Agreement; a long-term Northwest interconnection agreement; and other agreements between Parties necessary for the construction, operation, maintenance, and improvement of the Project; and agreements between the Participants and other entities, or among the Participants, necessary to provide for coordinated and parallel operation and interconnection of the Project with the Pacific AC Intertie; all as may be amended or superseded from time to time.

4.35 Project Costs

All costs of Project Work.

4.36 Project Funds

All funds related to Project Work.

4.37 Project Manager

The Agency, or its successor.

4.38 Project Operation and Maintenance Agreement (POMA)

This Agreement which provides for the operation and maintenance of the Project.

4.39 Project Work

All work necessary and useful for: (1) completing the Project in accordance with the Project Plan of Service and Prudent Utility Practice; (2) preparing for its effective operation, maintenance, and use; (3) making necessary and desirable improvements to the Project including Capital Improvements; (4) operating or causing the operation of the Project; (5) maintaining or causing the maintenance of the Project; and (6) providing for the technical and administrative activities for the Project.

4.40 Prudent Utility Practice

Those practices, methods and procedures, as modified from time to time, that are currently and commonly used by electric utilities to design, engineer, select, construct, operate, and maintain electric power facilities and equipment dependably, reliably, safely, efficiently, and economically, with due regard to the state of the art in the electric power industry.

4.41 Rated COTP Transfer Capability

The Transfer Capability of the Project, specified in each direction, initially established at the California-Oregon border to be 1600 megawatts in the north to south direction and 1225 megawatts in the south to north direction, and as the Management Committee may determine from time to time for the Project or any Segment.

4.42 Replacement

A new component, other than an Addition or a Betterment, substituting for another such comparable component which no longer adequately performs its function or which has expended its useful life, irrespective of whether the replacement results in an incidental increase in Rated COTP Transfer Capability at the California-Oregon border.

4.43 Segment

The portions of the Project which are initially designated and defined as the Northern Segment, the CVP Upgrade Segment, and the Tesla By-Pass Segment.

4.44 System

The Project and the Pacific AC Intertie.

4.45 Tesla By-Pass Segment

The double-circuit 500-kV AC transmission line between the Tracy Substation Expansion and a location described as tower No. 38, which intercepts the Pacific AC Intertie on PG&E's 500-kV transmission line exiting south from Tesla Substation to Midway Substation.

4.46 Tracy Substation Expansion

The 500/230-kV AC substation facilities, including the associated Land Rights, located near Western's existing Tracy Substation.

4.47 Transfer Capability

The ability of electric power transmission facilities and related facilities to transmit electric power between two locations, specified separately for each direction between such locations, and expressed in megawatts.

5. EFFECTIVE DATE, TERM, AND TERMINATION

5.1 Effective Date

This Agreement shall be effective and binding upon those signatories hereto which have received the required approval to enter into this Agreement when executed by at least TANC and Western, provided that no Participant shall have the rights under this Agreement until such Participant executes this Agreement.

5.2 Term and Termination

This Agreement shall terminate on the date upon which the LTPA terminates without a successor which includes Western or its successor as a Party. Upon termination, any rights provided in accordance with this Agreement shall cease, and any obligations previously incurred in accordance with this Agreement, including an obligation to pay money for services received, shall be preserved until satisfied.

6. OPERATION AND MAINTENANCE WORK

6.1 Designation, Resignation, and Replacement of An Operating Agent

Western is hereby designated as the Operating Agent for the Project until otherwise determined by the Management Committee and shall perform the duties and responsibilities of the Operating Agent, in addition to Western's other responsibilities, set forth in this Agreement. As the Operating Agent, Western shall fulfill the duties specified herein pursuant to Section 25.

6.1.1 Resignation

If at any time during the term of this Agreement the Operating Agent determines that it will no longer perform the duties of the Operating Agent, it may resign from the role of Operating Agent by giving notice to each of the Participants of its intention to resign no less than six (6) months prior to the date upon which the resignation is to take effect. The resigning Operating Agent will cooperate in all reasonable actions undertaken by the Management Committee to secure a replacement Operating Agent and shall cooperate in all reasonable activities required to transfer its duties, obligations, and responsibilities to the replacement Operating Agent.

6.1.2 Replacement

If at any time during the term of this Agreement, the Management Committee determines that the performance of the Operating Agent is unsatisfactory, the Operating Agent may be replaced by the Management Committee.

6.2 Responsibilities and General Authority

6.2.1 Operating Agent

The Operating Agent shall be responsible for the Operation and Maintenance Work required to physically operate the Project in parallel with the Pacific AC Intertie and interconnected with the PG&E Electric System and to take such actions as are necessary and proper to ensure that

the Project is operated and maintained in a safe, efficient, and reliable manner to maximize the use of Parties' Entitlements. The Operating Agent shall cooperate and coordinate with Western and the Project Manager in the conduct of its Operation and Maintenance Work.

6.2.2 Western

Western shall be responsible for the Operation and Maintenance Work for the CVP Upgrade Segment, for the Olinda Substation, for the Maxwell Compensation Station, for the Tracy Substation Expansion, and for certain Communications Facilities associated therewith. Western shall cooperate and coordinate with the Operating Agent and the Project Manager in the conduct of its Operation and Maintenance Work.

6.2.2.1 CVP Upgrade Segment

Western's responsibility for Operation and Maintenance Work on the CVP Upgrade Segment shall include all elements of the Project from and including the insulators on the line-side of the Olinda Substation 500-kV dead-end structure to and including the insulators on the line-side of the Tracy Substation Expansion 500-kV dead-end structure, and including all Project equipment and facilities located at the Maxwell Compensation Station.

6.2.2.2 Olinda Substation

Western's responsibility for Operation and Maintenance Work at the Olinda Substation shall include all 500-kV equipment and facilities from and including the 500-kV dead-end structures on the Northern Segment and CVP Upgrade Segment to and including the 230-kV bushings on the 500/230-kV transformers, and including all 500-kV related equipment and facilities located in the Olinda Substation. Any maintenance and operation of any 230-kV related equipment and facilities located in the Olinda

Substation shall not be Operation and Maintenance Work in accordance with this Agreement.

6.2.2.3 Tracy Substation Expansion

Western's responsibility for Operation and Maintenance Work at Tracy Substation Expansion shall include all 500-kV equipment and facilities from and including the 500-kV dead-end structures on the CVP Upgrade Segment and Tesla By-Pass Segment to and including the 230-kV bushings on the 500/230-kV transformers, and including all 500-kV related equipment and facilities located in the Tracy Substation Expansion. Any maintenance and operation of any 230-kV related equipment and facilities located in the Tracy Substation and Tracy Substation Expansion shall not be Operation and Maintenance Work in accordance with this Agreement.

6.2.2.4 Communication Facilities

Western's responsibility for Operation and Maintenance Work on Communication Facilities shall include all such facilities of the Project located at each of the following sites: 1) Olinda Substation; 2) Maxwell Compensation Station; 3) Tracy Substation Expansion; 4) Elverta; and 5) Western's Sacramento Area Office Dispatch Center.

6.2.3 Project Manager

The Project Manager shall be responsible for the Operation and Maintenance Work for the Northern Segment, for the Tesla By-Pass Segment, and for Communication Facilities associated therewith. The Project Manager shall cooperate and coordinate with the Operating Agent and Western in the conduct of its Operation and Maintenance Work.

6.2.3.1 Northern Segment

The Project Manager's responsibility for Operation and Maintenance Work on the Northern Segment shall include all elements of the Project from and including tower No. 634 near the California-Oregon border to and including the insulators on the line-side of the Olinda Substation 500-kV dead-end structure associated with the Northern Segment.

6.2.3.2 Tesla By-Pass Segment

The Project Manager's responsibility for Operation and Maintenance Work on the Tesla By-Pass Segment shall include all elements of the Project from the point of change of ownership of PG&E's Electric System to and including the insulators on the line-side of the Tracy Substation Expansion 500-kV dead-end structures associated with the 500-kV transmission lines which connect the Tracy Substation Expansion to PG&E's Tesla and Los Banos Substations.

6.2.3.3 Communication Facilities

The Project Manager's responsibility for Operation and Maintenance Work on Communication Facilities shall include all such facilities of the Project located at each of the following sites: 1) Timber Mountain; 2) Happy Camp; 3) Widow Mountain; 4) Big Valley; 5) Bear Spring; 6) Manzanita; 7) Hooker; 8) Round Mountain; 9) Corning; 10) Logan Creek; 11) Sites; 12) Rumsey; 13) Berryessa Peak; 14) Davis; 15) Elk Grove; 16) Sugarloaf; 17) Pixley; 18) Vollmer; 19) Highland Peak; 20) Skeggs Point; 21) Mount Oso; 22) Pacheco Peak; and any other site that is not the operation and maintenance responsibility of Western.

6.3 Work Standards

All Operation and Maintenance Work shall be performed in accordance with Prudent Utility Practice, this Agreement, the Project Agreements, any relevant guidelines, policies, and procedures approved by the Management Committee, and any applicable laws, regulations, orders, permits, leases, and licenses now or hereafter in effect or lawfully imposed by any governing authority. All Operation and Maintenance Work shall be performed in a manner which minimizes disruption of the Parties' Entitlements and other Project operations. For all Operation and Maintenance Work which is scheduled or planned to cause a sustained interruption of Project facilities, a plan shall be submitted by the Operating Agent, through the Project Manager, to and approved by the Management Committee prior to the implementation of such Operation and Maintenance Work. In the event of an Operating Emergency, the Operating Agent or Western, as applicable, shall immediately act to eliminate the cause or minimize the effect of such Operating Emergency, to the reasonable extent of its ability, and shall immediately act to restore normal operation of the COTP in coordination with the Pacific AC Intertie.

6.4 Specific Duties and Responsibilities

6.4.1 Operating Agent

The Operating Agent shall perform the activities for Project operations, and shall coordinate Operation and Maintenance Work on Segments maintained by Western and the Project Manager, and, in conjunction with Western and the Project Manager, shall perform the following specific duties in addition to those general duties set forth in Section 6.5:

6.4.1.1 Coordination of Entitlements

Coordination and implementation of the Parties' Entitlements in accordance with the LTPA, procedures approved and adopted by the Management Committee, and a coordinated operations agreement, as the latter may be modified from time to time or

superseded.

6.4.1.2 Curtailment Activities

Arrange for procedures that provide that all Curtailments be implemented on a pro-rata basis. In the event of a Curtailment resulting from an outage, loop flow, exceedance of nomogram limits, or an Operating Emergency on the Project, or any Segment, notify the Parties as soon as practicable, of: (1) the occurrence, cause, and nature of such operating constraint and Curtailment; (2) the steps being taken to mitigate or terminate such operating constraint and Curtailment; (3) the amount of any reduction of the Parties' Entitlements resulting from the Curtailment; and (4) the expected duration of the operating constraint and Curtailment. Such notification shall conform to the requirements of Appendix A to this Agreement. In mitigating or terminating such operating constraint and Curtailment, the Operating Agent shall coordinate and cooperate with any entity responsible for the operation and maintenance of System facilities;

6.4.1.3 Curtailment Reporting

As soon as practicable after a Curtailment, and during an extended Curtailment, unless otherwise agreed, prepare and submit to the Parties a Curtailment report, via an electronic bulletin board, or equivalent, to be updated regularly and include, at a minimum, the following data:

6.4.1.3.1 The nature, cause, and duration or probable duration of the Curtailment;

6.4.1.3.2 The actions taken by the Operating Agent and operators of interconnected Electric Systems in

response to the Curtailment;

6.4.1.3.3 The Available COTP Transfer Capability during the Curtailment;

6.4.1.3.4 The amount of the reduction of Entitlement imposed on each Party during the Curtailment; and

6.4.1.3.5 Any additional data which the Management Committee or the Operating Agent determines is useful in confirming that the burdens of the Curtailment were shared in accordance with this Agreement.

6.4.1.4 Records of Curtailments

Keep and maintain accurate records of all Curtailments, the reason(s) therefore, the starting and ending times, and the magnitude of all transfer capability reductions. Such records shall be submitted monthly to the Project Manager and kept and maintained in accordance with Section 13;

6.4.1.5 Scheduled Outages

In coordination with Western, the Project Manager, and the operators of interconnected Electric Systems, and in accordance with the guidelines contained in Appendix C to this Agreement, obtain approval from the Management Committee for scheduled outages for maintenance, inspection, or other purposes on the Project and for all pre-arranged outages, provided, that the Operating Agent shall be excused from this requirement only in the event that a scheduled outage is required prior to the convening of the Management Committee during which time there exists imminent danger of an Operating Emergency but for such scheduled maintenance, provided further, that the

Operating Agent shall notify the Project Manager and Western of such scheduled maintenance concurrently and immediately upon determining the need for such scheduled maintenance;

6.4.1.6 Power Flow Monitoring

Continuously monitor and record information on power flows on the Project and the Pacific AC Intertie and provide the Parties with information on such power flows in accordance with guidelines approved by the Management Committee;

6.4.1.7 Emergency Plans and Procedures

In coordination with Western and the Project Manager, prepare and recommend emergency plans and procedures and mutual aid agreements with other appropriate entities in accordance with the guidelines contained in Appendix C to this Agreement;

6.4.1.8 Interconnected Systems

Consult and cooperate with the operators of interconnected Electric Systems to minimize and otherwise address outages and other problems on Project facilities and interconnected Electric Systems in accordance with the guidelines contained in Appendix C to this Agreement. The Parties agree that they will make best efforts to negotiate or obtain FERC approval of provisions, whenever necessary, stating that the operator of the System is to make all emergency notifications of power schedule revisions or Curtailments directly to entities scheduling power on the COTP; and

6.4.1.9 Referrals to the Project Manager

Provide monthly and other periodic and special reports to the Project Manager detailing the progress and cost of Operation and Maintenance Work performed, and refer all matters requiring

review, approval, or action by the Management Committee to the Project Manager on a timely basis and provide the Project Manager with records and information which may be required to perform its responsibilities and to prepare recommendations to the Management Committee at least twenty (20) days prior to any Management Committee meeting.

6.4.2 Western

Western shall perform or cause the performance of all Operation and Maintenance Work for the CVP Upgrade Segment, for the Olinda Substation, for the Maxwell Compensation Station, for the Tracy Substation Expansion, and for certain Communications Facilities associated therewith, and shall coordinate such Operation and Maintenance Work with the Operating Agent and the Project Manager and shall perform the following specific duties in addition to those general duties set forth in Section 6.5:

6.4.2.1 Communication Facilities

Assure that the Communication Facilities sites set forth in Section 6.2.2.4 and all equipment associated therewith at each site are operated and maintained in accordance with general policies and procedures approved and adopted by the Management Committee; and

6.4.2.2 Referrals to Project Manager

Refer all matters requiring review, approval, or action by the Management Committee to the Project Manager on a timely basis and provide the Project Manager with reports, data, records, and information which may be required for it to perform its responsibilities and to prepare recommendations to the Management Committee at least twenty (20) days prior to any Management Committee meeting.

6.4.3 Project Manager

The Project Manager shall perform or cause the performance of the Operation and Maintenance Work for the Northern Segment, the Tesla By-Pass Segment, and Communication Facilities associated therewith, and shall coordinate such Operation and Maintenance Work with the Operating Agent and Western and shall perform the following specific duties in addition to those general duties set forth in Section 6.5:

6.4.3.1 Communication Facilities

Assure that each of the Communication Facilities sites set forth in Section 6.2.3.3 and all equipment associated therewith at each site is operated and maintained in accordance with policies and procedures approved and adopted by the Management Committee;

6.4.3.2 Insurance

Arrange for the placement and maintenance of insurance in accordance with Section 12;

6.4.3.3 Operation and Maintenance Budget and Work Plan

In cooperation with the Operating Agent and Western, annually prepare an Operation and Maintenance Budget and Work Plan in accordance with Section 7 for carrying out Operation and Maintenance Work under this Agreement and periodically prepare and submit revisions thereto, as necessary, to the Management Committee for approval; and

6.4.3.4 Referrals to the Management Committee

Refer all matters requiring review, approval, or action by the Management Committee to the Management Committee on a timely basis and provide the Management Committee with reports, data, records, and information which may be required

for it to perform its responsibilities.

6.5 Generally Applicable Duties and Responsibilities

The Operating Agent, Western, and the Project Manager each for its areas of responsibility, shall cooperate to perform or cause the performance of the following duties:

6.5.1 Reports

Comply with the provisions of Section 9 in preparing reports of Operation and Maintenance Work;

6.5.2 Access to Project Information and Records

Comply with the provisions of Section 13 in providing access to records of Project Operation and Maintenance Work and the retention and disposition thereof;

6.5.3 Personnel

Provide qualified, equipped, and trained personnel including, when appropriate, the employees of other Parties, contractors, consultants, attorneys, accountants, and others, to perform Operation and Maintenance Work;

6.5.4 Coordination with E&O Committee

Cooperate and coordinate with the E&O Committee in the development of recommendations for presentation to the Management Committee by the Project Manager for general operation and maintenance procedures for the Project;

6.5.5 Procurement

Obtain services, studies, equipment, apparatus, machinery, materials, tools, and supplies and maintain inventories of any necessary materials and supplies, including spare parts, in accordance with the provisions of Section 6.6 and Appendix B to this Agreement;

6.5.6 Diagnostic Testing

Perform periodic diagnostic testing of Project facilities to verify and document performance and to identify safety hazards. The records resulting from such testing shall be systematically reviewed and analyzed by the Operating Agent, Western, and the Project Manager to identify maintenance trends and to develop recommendations for presentation by the Project Manager to the Management Committee for its consideration in adopting or improving operation and maintenance procedures;

6.5.7 Inspection

Conduct periodic inspections and testing of all tools and equipment used in performing Operation and Maintenance Work to determine the suitability and condition of such tools and equipment;

6.5.8 Environmental Protection

Comply with all state and federal laws, regulations, permits, easements, leases, and licenses respecting environmental protection;

6.5.9 Fire Prevention

Adopt and implement adequate fire prevention programs and measures, in conjunction with existing agreements with the United States Forest Service and the California Department of Forestry, in the vicinity of all Project facilities and rights of way, including controlled burning, clearing, thinning, vegetation management, and posting;

6.5.10 Warranties

Require, obtain, and enforce any and all appropriate warranties on equipment, facilities, materials, and services utilized in Operation and Maintenance Work or installed as Project facilities; and

6.5.11 Other Duties

Prepare any procedures, guidelines, practices, lists, reports, schedules, budgets, and other information which the Management Committee directs

be prepared with respect to any aspect of the Operation and Maintenance Work undertaken in accordance with this Agreement.

6.6 Materials, Supplies, and Spare Parts

6.6.1 Those actions and work elements to be performed by the Project Manager, the Operating Agent, Western, and any Participant, as appropriately delineated in an approved Operation and Maintenance Budget and Work Plan, that involve the acquisition and inventory of materials, supplies, and spare parts necessary to maintain the safe, efficient, continuous, and reliable operation of the Project and all of its Segments in accordance with the Project Agreements and with procedures approved and adopted by the Management Committee shall include, at a minimum:

6.6.1.1 Arrangements for procurement, storage, and distribution of materials, supplies, and spare parts necessary for the maintenance of Project transmission line facilities;

6.6.1.2 Arrangements for the procurement, storage, and distribution of materials, supplies, and spare parts necessary for the maintenance of Project substation facilities; and

6.6.1.3 Arrangements for the procurement, storage, and distribution of materials, supplies, and spare parts necessary for the maintenance of Project Communication Facilities.

6.6.2 The spare parts inventory shall be maintained on a current basis and documented in accordance with the guidelines set forth in Appendix B to this Agreement.

6.7 Contracting Procedures

In performing or causing to be performed Operation and Maintenance Work and in constructing or causing the construction of Capital Improvements, the Operating Agent, Western, and the Project Manager, as appropriate, shall:

6.7.1 Recommend to the Management Committee the lowest responsive and responsible bidder when the services are competitively bid;

6.7.2 Evaluate the professional qualifications of each potential contractor in terms of its: (1) specialized experience and technical competence; (2) ability to perform the contract or effectuate the transaction within the time specified; (3) character, integrity, reputation, and experience; (4) past performance on similar contracts and compliance with performance schedules; (5) ability to provide future services, maintenance, and repair of parts for the services and supplies provided; and (6) lowest responsive and responsible prices and rates;

6.7.3 Comply with all applicable laws, rules, and regulations for safety and for protection of the environment, the mitigation measures and the requirements of the Project EIS/EIR, and in accordance with the terms and conditions of any applicable permits or licenses relating to the Project which are a part of, or a restriction stemming from, any lease, permanent easement, or joint use agreement;

6.7.4 Conduct or cause to be conducted tests, consistent with both Prudent Utility Practice and the plans and specifications approved by the Management Committee, to verify that the specified characteristics of equipment and facilities have been achieved and, if necessary, make or cause to be made modifications to meet the specified requirements thereof;

6.7.5 Approve or disapprove contract modifications to any competitive award contract for Operation and Maintenance Work which individually or cumulatively do not, or are not reasonably anticipated to, increase Operation and Maintenance Costs beyond those authorized in the annual Operation and Maintenance Budget and Work Plan approved by the Management Committee in accordance with Section 7;

6.7.6 Notify the Management Committee monthly of all contract modifications authorized in accordance with Section 6.7.5; and

6.7.7 If the approval of any contract modification would cause the amount of funds authorized for Operation and Maintenance Work in the current Operation and Maintenance Budget and Work Plan, including all available special allowances and contingency funds, to be exceeded, prior to making such an approval, submit such contract modification to the Project Manager for the purpose of making an appropriate recommendation to the Management Committee for approval.

7. OPERATION AND MAINTENANCE BUDGET AND WORK PLAN

7.1 Authorization

Beginning with the Commercial Operation Date of the Project or any Segment, the Operation and Maintenance Budget and Work Plan, prepared annually in accordance with this Section 7 and approved by the Management Committee, shall provide the Operating Agent, Western, and the Project Manager with the authorization to incur Operation and Maintenance Costs during that approved year. The total Operation and Maintenance Costs in the Operation and Maintenance Budget and Work Plan shall not be exceeded without a revision to the Operation and Maintenance Budget and Work Plan approved by the Management Committee.

7.2 Preparation and Approval

Prior to the Commercial Operation Date of the Project or any Segment, the Project Manager, in coordination with the Operating Agent and Western, shall prepare an Operation and Maintenance Budget and Work Plan for the first partial or full year of operation, and thereafter shall prepare or cause to be prepared an annual Operation and Maintenance Budget and Work Plan for each subsequent calendar year. Unless otherwise provided by the Management Committee, the Operation and Maintenance Budget and Work Plan shall be prepared in similar format and in at least the same detail as the July 1991 Construction Budget and Work Plan for the

Project and shall include budgets and work plans for all Operation and Maintenance Work elements, and for Capital Improvement Work elements that are for Additions or Replacements, identified and proposed to be performed on the Project during the upcoming year, provided that each Operation and Maintenance Budget and Work Plan shall contain specific statements of work for every major category of Operation and Maintenance Work. For the first full or partial year of operation, the Project Manager, in coordination with the Operating Agent and Western, shall submit a proposed initial Operation and Maintenance Budget and Work Plan to the Management Committee for review, modification, approval, or other action. For all subsequent years, ninety (90) days prior to the end of the preceding year, the Project Manager shall submit a proposed Operation and Maintenance Budget and Work Plan for the next subsequent year to the Management Committee for review, modification, approval, or other action.

7.3 Revisions

Any Party may recommend a revision to the Operation and Maintenance Budget and Work Plan at any time during the year. The Management Committee may direct revisions independently or in response to a Party's recommendation at any time. The Project Manager shall submit a proposed revision to the Operation and Maintenance Budget and Work Plan at the earliest reasonable date whenever the Operating Agent, Western, or the Project Manager anticipates that the total Operation and Maintenance Budget and Work Plan cost might exceed the amount reflected in the most recently approved or revised Operation and Maintenance Budget and Work Plan. No revision to an Operation and Maintenance Budget and Work Plan shall be effective until it has been approved by the Management Committee.

7.4 Additions and Replacements Budgets

Routine Additions and Replacements shall be included by the Project Manager in the annual Operation and Maintenance Budget and Work Plan, and shall be authorized by the Management Committee upon approval of such Operation and Maintenance

Budget and Work Plan.

8. COSTS OF OPERATION AND MAINTENANCE WORK

Costs and obligations incurred for Operation and Maintenance Work in accordance with an approved Operation and Maintenance Budget and Work Plan shall be Operation and Maintenance Costs, and shall be shared and paid according to the Cost Sharing Percentages set forth in Appendix E to this Agreement. Such Operation and Maintenance Costs shall include those expenses set forth in Sections 8.1, 8.2, and 8.3 for Operation and Maintenance Work, approved by the Management Committee in an Operation and Maintenance Budget and Work Plan, and to the extent that such expenses are auditable and properly accounted.

8.1 The following shall be considered Operation expenses:

8.1.1 Operation supervision, engineering, and system studies such as the labor and expenses incurred in the general supervision and direction of the operation of the Project and the System;

8.1.2 Project maintenance dispatching and scheduling activities such as the cost of labor, materials used, and expenses incurred in maintenance dispatching and scheduling activities pertaining to the Project;

8.1.3 Station operation expenses such as the cost of labor, materials used, and expenses incurred in operating the Project substations;

8.1.4 Transmission line operation expenses such as the cost of labor, materials used, and expenses incurred in operating the Project transmission line Segments;

8.1.5 Miscellaneous expenses, such as the cost of labor, materials used, expenses incurred in transmission map and record work, and other Project expenses not delineated elsewhere in this Section 8; and

8.1.6 Rents and leases, such as the cost of expenses of renting property from other parties when such property is used, occupied, or operated in connection with the Project, which shall include taxes, license and easement fees.

8.2 The following shall be considered Maintenance expenses:

8.2.1 Maintenance supervision and engineering, such as the cost of labor, materials used, and expenses incurred in the general supervision and direction of maintenance of the Project transmission line Segments;

8.2.2 Maintenance of structures, such as the cost of labor, materials used, and expenses incurred in the maintenance of 500-kV Project transmission line Segment structures;

8.2.3 Maintenance of station equipment, such as the cost of labor, materials used, and expenses incurred in the maintenance of Project station equipment, including Communication Facilities;

8.2.4 Maintenance of Project transmission line Segments such as the cost of labor, materials used, and expenses incurred in the maintenance of 500-kV Project transmission line Segments; and

8.2.5 Maintenance of miscellaneous Project transmission line facilities, such as the cost of labor, materials and vehicles used, and expenses incurred in maintenance of owned or leased transmission equipment or facilities, which are used directly or indirectly for the Project and are not provided for elsewhere in this Section 8.

8.3 Overhead expenses, associated with the direct labor of employees at various levels of supervision for Operation and Maintenance Work, and not charged directly in accordance with Sections 8.1 and 8.2, and not included in administrative and general expenses in accordance with Section 8.4, which are allocable to Operation and Maintenance Costs, provided that such chargeable overhead expenses shall be calculated in accordance with Appendix D to this Agreement.

8.4 Administrative and general expenses associated with the direct labor charged for Operation and Maintenance Work, including state and local fees, training expenses, and applicable labor loading charges on the portion of indirect or supervisory labor included in overhead, but excluding any such activities during commissioning and

energization of the Project, and not charged directly in accordance with Sections 8.1 and 8.2, and not included in overhead expenses in accordance with Section 8.3, which are allocable to Operation and Maintenance Costs, provided that such chargeable administrative and general expenses shall be calculated in accordance with Appendix D to this Agreement.

9. REPORTS

Unless otherwise directed by the Management Committee, the Project Manager, with the cooperation of the Operating Agent and Western, shall prepare and submit the following reports on all Operations and Maintenance Work activities:

9.1 Weekly Operation and Maintenance Reports

A "Weekly Operation and Maintenance Report" shall be prepared by the Project Manager, in coordination with the Operating Agent and Western, during periods of maintenance or overhaul of major Project facilities and substation equipment planned or expected to last longer than four (4) weeks, or extended beyond four (4) weeks, and made available to requesting Parties within three (3) working days following the end of each week. The "Weekly Operation and Maintenance Reports" shall include a description of all activities performed during the week, and the status of such activities for all transmission line segments, substations, and communication systems work. Any Party performing Operation and Maintenance Work shall provide in a timely manner to the Project Manager all information and data which is requested and is reasonably required by the Project Manager for the development of such "Weekly Operation and Maintenance Work Report," including but not limited to work plans, schedules, and estimates of Project Cost.

9.2 Monthly Operation and Maintenance Work Schedule, Status, and Cost Reports

An "Operation and Maintenance Work Schedule, Status, and Cost Report" shall be prepared by the Project Manager, in coordination with the Operating Agent and Western, and submitted to all Parties within twenty-five (25) days following the end of each month. Such monthly report shall, for all Operation and Maintenance Work

and for each Addition and Replacement activity, describe the activity on each transmission line segment, substation, and communication system facility of the Project performed during the prior month, and cumulatively, and the status and progress of such work, the costs of such work, and a summary comparison, including a discussion of the differences between planned work and actual work completed, and between expenditures forecasted in the Operation and Maintenance Budget and Work Plan and the costs actually incurred and paid during the same period. Such report shall also include, for all Operation and Maintenance Work and for each Addition and Replacement activity, schedules of manpower, material, and equipment, with milestones from which progress on planned activities is measured against actual activities, and from which prior month, and cumulative, variance analyses shall be prepared and presented within such report. All variances equal to or greater than ten percent (10%), for the prior month, or cumulative, shall be discussed in detail within the monthly report, noting all corrective actions planned or implemented to minimize or eliminate such variance. Each monthly report shall also contain a cumulative "Estimate to Complete" for all Operation and Maintenance Work identified in the approved Operation and Maintenance Budget and Work Plan. Each Party performing Operation and Maintenance Work shall submit to the Project Manager, within fifteen (15) days following the end of each month, all requested information and data reasonably required by the Project Manager for the development of such monthly "Operation and Maintenance Work Schedule Status Report".

9.3 Quarterly Claims, Liens, Settlement, and Awards Reports

A "Claims, Liens, Settlement, and Awards Report" shall be prepared by the Project Manager, in coordination with the Operating Agent and Western, and distributed to the Parties within thirty (30) days following the end of each quarter. Such quarterly report shall describe each claim, lien, settlement, stop notice, and award pertaining to Project facilities or any Party attributable to Operation and Maintenance Work

outstanding or incurred within the last quarter. Each Party shall, no later than ten (10) days following its receipt or notification, provide the Project Manager with information on claims, liens, stop notices, settlements, and awards pertaining to any Party, which claims, liens, stop notices, settlements, or awards are attributable to Operation and Maintenance Work.

10. BILLING AND PAYMENTS

10.1 Estimated Operation and Maintenance Costs

From the effective date of this Agreement, unless otherwise agreed by the Parties, all Operation and Maintenance Costs shall be paid in advance based upon costs estimated by the Project Manager, in coordination with the Operating Agent and Western, and shall be processed in accordance with Sections 10.2, 10.3, and 10.4.

10.2 Initial Invoice

To provide the initial funding of Operation and Maintenance Work to be performed in accordance with this Agreement, and to establish a prudent reserve in the event of an abnormal requirement for Operation and Maintenance Work, the Project Manager, in collaboration with the Operating Agent and Western, shall prepare and submit an initial invoice at least twenty (20) days prior to the commercial operation of the Project. Such initial invoice shall set forth the estimated funding required in accordance with the approved Operation and Maintenance Budget and Work Plan to pay the estimated costs for the first three (3) full months of the Project's operation, and shall set forth the proportion of such estimated funding requirement due and payable, computed in accordance with the Cost Sharing Percentages set forth in Appendix E to this Agreement.

10.3 Monthly Invoices

No later than the fifteenth (15th) day of the first month of operation, and by the fifteenth (15th) day of each month thereafter, the Project Manager, in collaboration with the Operating Agent and Western, shall prepare and submit invoices for the estimated Operation and Maintenance Costs projected to be incurred in the third

(3rd) month following the month in which the invoice is sent. The proportion of projected Operation and Maintenance Costs due and payable shall be computed in accordance with the Cost Sharing Percentages set forth in Appendix E to this Agreement. The total of such projected costs for each month shall be adjusted by the difference between the estimated and actual expenditures occurring during each month.

10.4 Payment for Operation and Maintenance Costs

Payment shall be made to the Project Manager for Operation and Maintenance Costs, which shall be shared and paid by all Parties in proportion to their Cost Sharing Percentages as set forth in Appendix E to this Agreement. Payment shall be made in full to the Project Manager within thirty (30) days from the date on which an invoice is received. Any payments sent through the United States mail, postage prepaid, or by prepaid commercial courier service, shall be deemed made on the date certified as delivered. Any amounts owed and not paid in full by the due date shall thereafter accrue an Interest Charge from the date the payment is due until the date such payment is made.

10.5 Payments to Western

Within fifteen (15) days after receipt of funds in accordance with Section 10.4, the Project Manager shall pay to Western any amounts due Western from such funds. In the event the Project Manager fails to provide to Western the necessary funds requested by Western pursuant to Section 10.3, such that Western has inadequate funds with which to perform its duties and obligations under this Agreement, Western shall provide notice in accordance with Section 28 and shall have the right, notwithstanding the provisions of Section 18.4, to suspend the performance of its duties and obligations under this Agreement and the default provisions of the IPA or LTPA, whichever is effective, shall become applicable. Upon receipt of the necessary funds by Western, or as otherwise agreed, Western shall resume the performance of its duties and obligations under this Agreement.

10.6 Payments to the Operating Agent

Within fifteen (15) days after receipt of funds in accordance with Section 10.4, the Project Manager shall pay to the Operating Agent any amounts due the Operating Agent from such funds.

10.7 Disputed Amounts and Adjustments

Disputes arising in connection with any invoice submitted by the Project Manager for Operation and Maintenance Costs shall be resolved in accordance with Section 18.

11. AUDITS

11.1 Management Committee Designated Audits

To evaluate the operating, administrative, and financial controls over Operation and Maintenance Work, the Management Committee may cause audits to be conducted not more than once annually, but at least once every five (5) years and in the event of an extraordinary Operation and Maintenance expense or Capital Improvement, of records which relate to such Operation and Maintenance Work, including but not limited to the financial, contract, scheduling, and Operation and Maintenance Work records of the Operating Agent, Western, and the Project Manager, and any other Party performing Operation and Maintenance Work. The Management Committee shall select a public accounting firm with expertise in the desired audits. All audits performed under this Section 11.1 shall be conducted in strict accordance with audit plans and budgets approved by the Management Committee. Any Party performing Operation and Maintenance Work or causing Operation and Maintenance Work to be performed shall not be entitled to vote in the Management Committee on matters related to conducting an audit of such Operation and Maintenance Work. The costs, including the reasonable costs incurred by the audited Party, of conducting all audits performed under this Section 11.1 shall be Project Costs. Each Party at its own expense may request that specific records be audited in an audit performed under this Section 11.1. A report on the results of each audit performed under this Section 11.1 shall be submitted to the Management Committee.

11.2 Other Audits

Except during periods when an audit is being conducted in accordance with Section 11.1, each Party shall have the right at its own expense and upon reasonable notice, to conduct an audit of the same books and records relating to Operation and Maintenance Work which the Management Committee is entitled to audit in Section 11.1. Any Party conducting an audit in accordance with this Section 11.2 shall pay all reasonable costs incurred by all audited Parties in connection with such audit and shall (1) minimize interference with each audited Party's activities, and (2) coordinate its audit activities with all other Parties desiring to conduct simultaneous audits.

11.3 Audits of Contracts for Operation and Maintenance Work

In entering into contracts for Operation and Maintenance Work, Parties shall attempt to include in all such contracts provisions which (1) provide to all Parties audit rights similar to those provided for in Section 11.2, (2) require the contractor to maintain records and accounts in sufficient detail to allow for audits in accordance with this Section 11, and (3) require the contractor to retain such records and accounts during the periods set forth in Section 11.4. Parties are excused from this Section 11.3 requirement in competitively bid fixed price, or fixed price variable unit price contracts, which do not provide for reimbursement of costs or submittal of claims.

11.4 Audit Periods

The right to commence audits of Operation and Maintenance Work in accordance with this Agreement shall continue two (2) years following the date on which Project Funds were used to pay for the costs of the particular Operation and Maintenance Work to be audited.

11.5 Adjustments

Any adjustments adopted by the Management Committee, following an audit conducted in accordance with this Section 11, requiring the payment of money, shall include an Interest Charge less two percent (2%), from the date of the payment being

adjusted to the date the adjustment is made. In the event of any adjustment in the billings made by a contractor, supplier, vendor, or subcontractor, the Party paying or receiving the adjustment shall promptly pay or submit an invoice to the Operating Agent, Western, or the Project Manager, whichever entity approved the disbursement of Project Funds for that contract, in the amount of the adjustment including any applicable interest.

12. INSURANCE

The Project Manager shall procure and maintain or cause to be procured and maintained, insurance with limits as set forth by the Management Committee generally in accordance with the IPA or the LTPA, whichever is effective.

13. ACCESS TO PROJECT INFORMATION AND RECORDS RETENTION

13.1 Project Information Generally

13.1.1 Each Party shall be entitled to obtain, in a timely manner, current information concerning Operation and Maintenance Work, through reasonable access to data, records, reports, and documents, or copies thereof, Project facilities, construction sites, manufacturing sites, storage facilities, operating or scheduling facilities, and to each Party performing Operation and Maintenance Work.

13.1.2 In exercising its rights to obtain access to or copies of data, records, reports, and documents regarding Operation and Maintenance Work, or to obtain access to the Party performing such work, each Party shall appoint one representative to serve as principal liaison with all Parties performing Operation and Maintenance Work.

13.1.3 Parties are encouraged to utilize common representatives in exercising their rights to obtain access to Project information. Parties shall give notice to the Project Manager of their appointed representatives and shall give notice of any change in such appointment. Parties' representatives shall have no authority to perform or direct any person in the performance of Operation

and Maintenance Work.

13.1.4 Each Party shall have reasonable access at reasonable times to such data, records, reports, and documents and, upon reasonable notice to the Participant holding and retaining them, may reproduce any or all of them at the requesting Party's sole expense.

13.2 Access to Project Facilities

Parties' representatives, subject to the provisions and limitations in this Section 13, shall be granted reasonable access to all Project facilities, and the operating or scheduling facilities of the Operating Agent and Western after any Commercial Operation Date strictly for the purpose of observing Project Work. Access shall be granted at reasonable times arranged in advance between the Party's representative and the Project Manager, the Operating Agent, or Western, as applicable, in accordance with terms and conditions of any agreement for the performance of Operation and Maintenance Work. All representatives shall comply with current safety and security procedures and practices of the Party performing the Project Work and with all applicable federal, state, and local requirements. Access may be limited at any time the Operating Agent, Western, and the Project Manager, as applicable, determines that such limitation is required for the safety or security of any personnel or equipment. At the discretion of the Operating Agent, Western, or the Project Manager, as applicable, the representatives shall be accompanied during access by authorized representatives of the Party performing the Project Work.

13.3 Retention of Documents

13.3.1 The Management Committee, the E&O Committee, the Agency, the Project Manager, the Operating Agent, Western, and each Party performing Project Work shall retain all data, records, reports, and documents relating to Project Work performed by them respectively, provided that the Management Committee shall adopt policies and procedures that are consistent with the requirements of California law applicable to public

agencies which are Parties or members of the Agency permitting the destruction or other disposition thereof.

13.3.2 Upon termination of this Agreement, the Operating Agent, Western, the Project Manager, and each Party performing Project Work shall retain, in a reasonably accessible location, all then existing data, records, reports, and documents relating to Project Work performed by them respectively, for a period of four (4) years from the date this Agreement is terminated.

14. ASSIGNMENTS

14.1 Except as provided in Sections 14.2 and 14.3, no Party shall have a right to assign, either in whole or in part, any of the rights, duties, or obligations created or imposed in this Agreement.

14.2 To the extent that a Party assigns any of its Entitlement in accordance with the IPA or the LTPA, whichever is effective, the concomitant rights, duties, and obligations of the assignor under this Agreement shall flow to the assignee which shall expressly assume all such rights, duties, and obligations in writing. Any amendments to any Project Agreements which may be necessary to accommodate any such assignment in accordance with this Section 14 shall be expeditiously completed by all Parties.

14.3 Except as provided in Sections 14.1 and 14.2, the duties and obligations of the Operating Agent, Western, and the Project Manager which are created or imposed in this Agreement may not be assigned without the approval of the Management Committee.

15. OBLIGATIONS AND RELATIONSHIP OF THE PARTIES

15.1 Each Party shall use its best efforts and work diligently, in good faith, and in a timely manner to carry out the duties and obligations imposed by this Agreement.

15.2 Each Party shall be individually responsible for its own covenants, obligations, and liabilities under this Agreement.

15.3 The covenants, obligations, rights, and liabilities of the Parties under this Agreement are intended to be several and not joint or collective, and nothing herein is intended

to be construed to create an association, joint venture, trust, or partnership, or to impose a trust or partnership covenant, obligation, or liability on or with regard to any of the Parties.

15.4 When the terms of this Agreement provide for action to be based upon the opinion, judgment, approval, review, or determination of any Party, such opinion, judgment, approval, review, or determination shall not be arbitrary, capricious, or unreasonable and such action shall be made or taken in good faith and in a timely manner.

15.5 To ensure that each Party may fully benefit from its Entitlement and related benefits resulting from its participation in the Project, each Party shall, individually and with the other Parties, assume an obligation to cooperate in the operation and maintenance of the Project, and the operation of the System, the implementation, administration, and enforcement of this Agreement and all other Project Agreements, and, where appropriate and necessary, to provide services under just and reasonable rates, terms, and conditions which do not materially and adversely affect the Electric System of a Participant, and in DWR's case also the State Water Project.

15.6 The Parties shall support, defend, and protect this Agreement before any regulatory authority or any court in any proceeding brought by an entity which is not a Party in which this Agreement, or a portion thereof, is an issue.

15.7 Except as expressly provided for in this Agreement or other Project Agreements, no Party shall be the agent of or have the right or power to bind another Party without its written consent.

16. INTEGRATION

16.1 This Agreement constitutes the complete and final expression of the agreement among the Parties and is a complete and exclusive statement of the terms of their agreement as to the matters addressed herein and when read in pari materia with other Project Agreements supersedes all prior offers, promises, representations, negotiations, discussions, communications, and commitments which may have been made in connection with the subject matter of this Agreement. This Agreement is the

product of negotiations and neither ambiguities nor uncertainties shall, therefore, be construed in a manner which is prejudicial to any Party.

16.2 The following Appendices are attached hereto and made a part of this Agreement:

Appendix A - Procedures for Curtailment Notification

Appendix B - Maintenance Program and Spare Parts Guidelines

Appendix C - Operations Guidelines

Appendix D - Administrative, General, and Overhead Expenses

Appendix E - Cost Sharing Percentages

Appendix F - Addresses for Notices

17. LIABILITY

17.1 Except for damage or loss resulting from willful misconduct, gross negligence, or breach of fiduciary obligation in connection with this Agreement, no Party, its members, directors, members of its governing body, officers, or employees shall be liable to any other Party for any loss or damage in connection with this Agreement.

17.2 Each Party shall be responsible for the consequences of its own willful misconduct, gross negligence, and breach of fiduciary obligation in connection with this Agreement, and in connection with any work undertaken in accordance with this Agreement, and shall indemnify, defend, and hold harmless the other Parties, their members, directors, members of their governing bodies, officers, and employees from the consequences thereof to the extent allowed by law. Nothing in this Section 17 shall require any Party to obtain insurance covering the willful misconduct, gross negligence, or breach of fiduciary obligation of any Party.

17.3 The provisions of this Section 17 shall not be construed to relieve any insurer of its obligation to pay any insurance proceeds in accordance with the terms and conditions of valid and enforceable insurance policies.

18. RESOLUTION OF DISPUTES

18.1 Informal Settlement

The Parties and the Project Manager shall use their best efforts to settle all disputes

arising under or in relation to this Agreement without recourse to either arbitration or litigation.

18.2 Submittal of Dispute to Management Committee

Any dispute, other than a dispute involving an alleged default which is subject to resolution in accordance with the IPA or the LTPA, whichever is effective, arising under or in relation to this Agreement, between or among Parties, which is not settled in the ordinary course of business, shall be submitted by the Project Manager at the request of the complaining Party(ies) to the Management Committee by notice in writing. Such notice shall set forth the nature of the dispute, the amount of money involved, if any, and the resolution and relief sought. The Management Committee shall meet promptly to attempt to effect a voluntary resolution of the dispute.

18.3 Formal Dispute Resolution

In the absence of a voluntary resolution, a complaining Party may seek to resolve a dispute either by seeking judicial relief or, with the written consent of all Participants which are parties to such dispute, by submitting the dispute to arbitration which shall be conducted using any procedures agreed to by such Parties. No litigation or arbitration shall be commenced until after the Management Committee has met at least once and failed to effect a voluntary resolution of the dispute; provided, that the preceding requirement shall not preclude a Party from initiating litigation or arbitration to secure any legal right which may otherwise be forfeited due to limitations or requirements imposed by rule or statute.

18.4 Continuation of Operation and Maintenance Work

Unless otherwise ordered by the arbitrator(s) or a court, or directed by the Management Committee, Operation and Maintenance Work, shall continue until a dispute is resolved, provided that the Operating Agent, Western, or the Project Manager, in performing Operation and Maintenance Work, shall take all reasonable available measures to avoid aggravating the subject matter of the dispute.

19. UNCONTROLLABLE FORCE

19.1 Except for the obligation of a Party to make payments in accordance with this Agreement, no Party shall be considered to be in default in the performance of any of its obligations when a failure to perform is due to an uncontrollable force.

19.2 The term "uncontrollable force" means any cause beyond the control of a Party which renders it unable to perform such obligation, including but not limited to failure of or imminent threat of failure of facilities due to flood, drought, earthquake, volcanic activity, tsunami, tornado, storm, fire, pestilence, lightning, and other natural catastrophe, epidemic, war, riot, civil disturbance or disobedience, vandalism, strike, labor dispute, labor or material shortage, sabotage, terrorism, government priorities, restraint by court order or public authority, and action or nonaction by, or inability to obtain the necessary authorizations or approvals from, any governmental agency or authority, which by exercise of due diligence such Party could not reasonably have been expected to avoid and which by exercise of due diligence it has been unable to overcome.

19.3 Nothing contained herein shall be construed to require a Party to settle any strike or labor dispute in which it may be involved.

19.4 In the event a Party is rendered unable to fulfill any of its obligations under this Agreement by reason of an uncontrollable force, such Party shall give prompt written notice of such fact to the Management Committee and shall seek to remove such inability with all reasonable dispatch.

20. SEVERABILITY

In the event that any term, covenant, or condition of this Agreement or the application of any such term, covenant, or condition shall be held invalid as to any person, entity, or circumstance by any court or agency having jurisdiction, such term, covenant, or condition shall remain in force and effect to the maximum extent permitted by law, and all other terms, covenants, and conditions of this Agreement and their application shall not be affected thereby but shall remain in force and effect unless a court or agency holds that

such provisions are not separable from all other provisions of this Agreement.

21. WAIVER

Any waiver at any time by a Party of its rights with respect to any matter arising in connection with this Agreement shall not be deemed a waiver with respect to any subsequent matter.

22. NO DEDICATION OF FACILITIES

Any undertaking by a Party under any provision of this Agreement is rendered strictly as an accommodation and shall not constitute the dedication of the Electric System by the undertaking Party to the public, to any other Party or to any third party, and any such undertaking by a Party shall cease upon the termination of all such Party's obligations under this Agreement.

23. NO PRECEDENTS

Nothing contained in this Agreement shall be construed to establish any precedent for any other agreement, or to grant any rights to or impose any obligations on any Party beyond the scope and term of this Agreement.

24. NO THIRD PARTY BENEFICIARIES

None of the promises, rights, or obligations contained in this Agreement shall inure to the benefit of any person or entity not a Party to this Agreement, other than the rights of the members of the Agency or Southern San Joaquin which derive from their membership in the Agency or Southern San Joaquin, respectively.

25. GOVERNING LAW

This Agreement is made and entered into in the State of California. Interpretation of this Agreement, and performance and enforcement thereof, shall be determined in accordance with California law to the extent applicable, and otherwise in accordance with federal law, as if performed wholly within the State of California.

26. GENERAL CONTRACTING PROVISIONS

26.1 Contingent Upon Appropriations

Where activities provided for in this Agreement extend beyond the current fiscal

year, continued expenditures by the United States are contingent upon Congress making the necessary appropriations required for the continued performance of the United States obligations under this Agreement. In case such appropriation is not made, Western shall provide the Project Manager with as much advance written notice as is possible, and the Parties shall release the United States from its contractual obligations and from all liability due to the failure of Congress to make such appropriation.

26.2 Officials Not to Benefit

No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this Agreement or to any benefit that may have arisen therefrom, but this restriction shall not be construed to extend to this Agreement if made with a corporation or company for its general benefit.

26.3 Covenant Against Contingent Fees

The Parties warrant that no person or selling agency has been employed or retained to solicit or secure this Agreement upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Parties for the purpose of securing business. For breach or violation of this warranty, Western shall have the right to withdraw from this Agreement without liability or, in its discretion, to deduct from the contract price or consideration Western's share of the full amount of such commission, percentage, brokerage, or contingent fee.

26.4 Contract Work Hours and Safety Standards

This Agreement, to the extent that it is of a character specified in Section 103 of the Contract Work Hours and Safety Standards Act (Act), 40 U.S.C.A. Section 329 (1986), is subject to the provisions of the Act, 40 U.S.C.A. Sections 327-333 (1986), and to regulations promulgated by the Secretary of Labor pursuant to the Act.

26.5 Equal Opportunity Employment Practices

Section 202 of Executive Order No. 11246, 43 Fed. Reg. 46501 (1978), which provides,

among other things, that the Parties will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin, is incorporated by reference in this Agreement.

26.6 Use of Convict Labor

The Parties agree not to employ any person undergoing sentence of imprisonment in performing work under this Agreement except as provided by 18 U.S.C. 4082(c)(2) and Executive Order 11755, December 29, 1973.

26.7 State Law

Each Party, to the extent applicable to such Party, agrees to comply with the laws of the State of California with regard to nondiscrimination, workers' compensation, and drug-free work place.

27. TITLES

The captions and headings in this Agreement are inserted to facilitate reference and shall have no bearing upon the interpretation of any of the terms and provisions of this Agreement.

28. NOTICES

Any notice, demand, request, submittal, response, or other specified form of communication, unless otherwise provided in this Agreement, shall be in writing and shall be deemed properly served, given, or made if and when delivered in person or sent by first class United States mail, postage prepaid and return receipt requested; or if and when sent by an electronic facsimile with receipt confirmed by addressee; or if and when sent by prepaid commercial courier service, to a Party at the address indicated in Appendix F to this Agreement.

29. AMENDMENTS

This Agreement may be amended only by a written instrument duly executed by all Parties hereto. Changes to the Appendices to this Agreement as a result of the operation of this Agreement or another Project Agreement shall not require amendments of this Agreement.

30. SUCCESSORS IN INTEREST

Every successor in interest to the rights, title, interest, or Entitlement of any Participant which has signed this Agreement shall be bound by all terms, provisions, and conditions of this Agreement, as if such successor in interest had duly executed this Agreement.

31. SIGNATURE CLAUSE

The signatories to this Agreement represent that they have been appropriately authorized to enter into this Agreement on behalf of the Party for whom they sign. This Agreement may be executed in counterparts, and each Party shall deliver its executed counterpart to the Project Manager.

WESTERN AREA POWER ADMINISTRATION

By: _____

Name: _____

Title: _____

Date: _____

TRANSMISSION AGENCY OF NORTHERN CALIFORNIA

By: _____

Name: _____

Title: _____

Date: _____

CITY OF VERNON

By: _____

Name: _____

Title: _____

Date: _____

SOUTHERN SAN JOAQUIN VALLEY POWER AUTHORITY

By: _____

Name: _____

Title: _____

Date: _____

SHASTA DAM AREA PUBLIC UTILITY DISTRICT

By: _____

Name: _____

Title: _____

Date: _____

SAN JUAN SUBURBAN WATER DISTRICT

By: _____

Name: _____

Title: _____

Date: _____

CARMICHAEL WATER DISTRICT

By: _____

Name: _____

Title: _____

Date: _____

CALIFORNIA DEPARTMENT OF

WATER RESOURCES

By: _____

Name: _____

Title: _____

Date: _____

APPENDIX A

PROCEDURES FOR CURTAILMENT NOTIFICATION

A.1 DESIGNATED REPRESENTATIVES

Within thirty (30) days of the execution of this Agreement, each Party shall designate a representative for the purposes of this Agreement and shall give written notice of such designation to the Operating Agent and all Parties. Any change of a designated representative by a Party shall immediately be communicated to the Operating Agent and all other Parties by written notice.

A.2 CURTAILMENT NOTIFICATION GUIDELINES

Unless modified by the Management Committee, notification of Curtailments shall be provided in accordance with the following guidelines:

A.2.1 Prescheduled Curtailment Notification Guidelines

The Operating Agent shall immediately notify the designated representative of each Party of any Curtailment which is scheduled or which has been determined to be necessary by the operator of the System. Such notification shall include the time of occurrence and the magnitude of the Curtailments on an hourly basis. The Operating Agent shall update the "bulletin board" to reflect each Party's share of Available COTP Transfer Capability.

A.2.2 Real-Time Curtailment Notification Guidelines

It is anticipated that in the event of an unanticipated curtailment or other emergency, the operator of the System shall notify the designated representative of the Parties of such Curtailment as soon as practicable and in accordance with the terms and conditions negotiated between the Parties and the operator of the System. The Operating Agent shall update the "bulletin board" to reflect each Party's share of the Available COTP Transfer Capability. Each Party or its designated representative shall be responsible for its communicating and coordinating real-time power schedules directly with the operator of the System.

APPENDIX B

MAINTENANCE PROGRAM AND SPARE PARTS GUIDELINES

B.1 OBJECTIVES

The maintenance procedures to be developed and promulgated by the Operating Agent, Western, and the Project Manager and which will be subject to approval and modification by the Management Committee, will be designed to achieve the overall objectives of the following guidelines:

B.1.1 To provide for proper maintenance of Project facilities, in accordance with Prudent Utility Practice, general Management Committee policies and procedures, relevant rules and regulations, license and permit conditions, and to best enhance Project performance, reliability, and availability to maximize the availability of the Parties' Entitlements;

B.1.2 To provide for mutual assistance policies and agreements necessary to enhance system availability and reliability, to maximize the availability of the Parties' Entitlements;

B.1.3 To provide for development of emergency repair strategies and plans to ensure rapid and safe repair of the Project facilities, and to eliminate or minimize outage time;

B.1.4 To utilize the existing operation and maintenance practices of the Parties performing Operation and Maintenance Work to the extent desirable and practicable; and

B.1.5 To provide for the desired and proper level of coordination among the Operating Agent, all other Parties, other interconnected utilities, and all those performing Operation and Maintenance Work.

B.2 CRITERIA

The Operation and Maintenance Work performed on Project facilities will comport with the following criteria:

B.2.1 Coordination of maintenance schedules with other Parties, interconnected utilities,

and those performing Operation and Maintenance Work in advance of work being performed;

B.2.2 Development and adaption of operation and maintenance procedures to establish safe and efficient methods of doing the Operation and Maintenance Work;

B.2.3 Provision of properly trained and competent personnel;

B.2.4 Establishment and maintenance of records and procedures to properly document the maintenance history of all Project facilities;

B.2.5 Provision and use of safe procedures, tools, and equipment for all maintenance activities;

B.2.6 Provision of appropriate management systems and reviews to ensure optimum productivity and equipment availability; and

B.2.7 Provision of necessary plans and controls to ensure compliance with all applicable federal, state, and local rules and regulations for environmental concerns and other license, permit, and regulatory matters.

B.3 TRANSMISSION LINE MAINTENANCE GUIDELINES

To the extent practicable, transmission line maintenance will be scheduled and performed with the Project energized. The work will be performed using a combination of bare-hand and/or hot stick methods (live-line), as appropriate. Activities associated with the normal maintenance of Project transmission lines should incorporate the following guidelines:

B.3.1 All lines are to be routinely patrolled. Both ground and aerial patrol of all Project lines should be performed as often as necessary. In those areas subject to numerous right-of-way encroachments, lines should be patrolled with greater frequency. Routine ground patrol of all towers should also be performed as often as required. Special patrols of Project transmission lines should be provided following unscheduled outages and when system conditions warrant;

B.3.2 All towers are to be inspected regularly. Such regular inspection will include (1) climbing of all new or upgraded towers at least once within four (4) years after energization, and (2) subsequently, climbing five percent (5%) of all steel towers

annually so that one hundred percent (100%) of all towers are inspected every twenty (20) years;

B.3.3 "Hot spots" are to be detected and repaired. Heat emission detection surveys, after initial energization, are to be made at least every three (3) years to detect any localized heat loss spots. Any time that loose connections or abnormal loading conditions are suspected, heat emission detection surveys should be conducted on a more frequent schedule;

B.3.4 Access roads are to be kept passable. Access road maintenance should be performed on an as-needed basis. All access road maintenance on public and private lands will be properly coordinated;

B.3.5 Fire prevention plans are to be prepared and implemented. To minimize the risk of a fire forcing any line of the System out of service, fire prevention activities may include prescribed burning, clearing, thinning, and other vegetation management options designed to maintain the reliability of the Project;

B.3.6 The Project rights-of-way are to be kept clear. Clearing of rights-of-way will be required in rapid-growth brush and timber areas. This work will be appropriately scheduled and coordinated. Encroachments on the Project rights-of-way will be brought to the attention of the appropriate Parties; and

B.3.7 Airway lighting and marking installations will comply with Federal Aviation Administration requirements. Burned-out lights and/or malfunctioning fixtures will be replaced or repaired in order to meet Federal Aviation Administration rules and regulations regarding tower/line visibility.

B.4 <u>SUBSTATION FACILITIES MAINTENANCE GUIDELINES</u>

To the extent practicable, substation and compensation station maintenance will be scheduled and performed to minimize the time the Project facilities are out of service and to maximize the availability of the Parties' Entitlements. Activities associated with the normal maintenance of Project substations should incorporate the following guidelines:

B.4.1 Walk-through inspections are to be made weekly by qualified personnel, except

the Maxwell Compensation Station which will be inspected on a monthly basis by qualified personnel;

B.4.2 "Hot spots" are to be detected and repaired. Heat emission detection surveys, after initial energization, are to be made at least every three (3) years to detect any localized hot spots. Any time loose connections or abnormal overloading conditions are suspected, heat emission detection surveys should be conducted on a more frequent schedule;

B.4.3 Viability of the ground mat should be ensured. Substation grounding systems should be regularly tested. Continued viability of the ground mat should be confirmed by test at least once every five (5) years;

B.4.4 Substation sites are to be kept neat and free from all hazards and obstructions;

B.4.5 Proper working condition and operability of power circuit breakers should be ensured. Annual and bi-annual external maintenance procedures will be performed. A comprehensive internal inspection and necessary maintenance should be performed at least once every five (5) years, and more frequently if necessary, due to the number and severity of fault operations, number of nonfault operations, and accumulated compressor operations, as applicable. Such maintenance activities should meet the manufacturers' recommendations;

B.4.6 Environmental compliance plans will be prepared, put in place, and adhered to in compliance with any other applicable federal, state, or local laws, relating to environmental compliance, hazardous and toxic materials maintenance and management, and the regulations implementing those laws. All Project stations will have spill prevention, control and countermeasure plans. Equipment for cleaning up and disposing of any oil spill contaminated materials will be readily available;

B.4.7 The viability of control and protection equipment will be ensured. Complete functional testing of all controls and protection equipment should be undertaken once every two and one half (2½) years. All testing which may impact Western

System Coordinating Council (WSCC) member systems should be performed in coordination with other (WSCC) members, as appropriate. Protective relay settings will be verified at intervals recommended by the more stringent of Prudent Utility Practice or manufacturers' recommendations;

B.4.8 The accuracy of revenue-quality metering systems will be ensured. Tests of revenue-quality metering equipment, if any, should be performed at least bi-annually;

B.4.9 Power transformers will be maintained in accordance with manufacturers' recommended maintenance schedule. Maintenance work should provide for such tests as dissolved gas-in-oil analysis, power factor tests, turns ratio tests, megger tests, and heat emission detection surveys of bushings, connections and tap changers;

B.4.10 Circuit switchers will be maintained in accordance with Prudent Utility Practice or the manufacturers' recommended maintenance schedule. Maintenance work should provide for comprehensive inspection and timing tests;

B.4.11 Supervisory control and data acquisition equipment will be maintained in accordance with Prudent Utility Practice or the manufacturer's recommended maintenance schedule;

B.4.12 Shunt capacitors and series capacitors will be maintained in accordance with Prudent Utility Practice or the manufacturers' recommended maintenance schedule;

B.4.13 Shunt reactors will be maintained in accordance with Prudent Utility Practice or the manufacturers' recommended maintenance schedule. Shunt reactors should be subjected to such tests as gas-in-oil analysis and power factor tests;

B.4.14 Station batteries will be maintained in accordance with Prudent Utility Practice or the manufacturers' recommended maintenance schedule;

B.4.15 Air disconnect switches will be maintained in accordance with Prudent Utility Practice or the manufacturers' recommended maintenance schedule;

B.4.16 Lightning arresters will be maintained in accordance with Prudent Utility Practice or the manufacturers' recommended maintenance schedule. Insulation power factor tests should be conducted at least once every five (5) years; and

B.4.17 Current, potential, and coupling capacitor voltage transformers will be maintained in accordance with Prudent Utility Practice or the manufacturers' recommended maintenance schedule. Insulation power factor tests, including excitation current tests, should be conducted at least once every five (5) years.

B.5 COMMUNICATION FACILITIES MAINTENANCE GUIDELINES

To the extent practicable, communication circuit and equipment maintenance activities will be scheduled and performed with Communication Facilities energized to minimize the time Communication Facilities are out of service and to maximize the Parties' Entitlements. Activities associated with the normal maintenance of Communication Facilities should incorporate the following guidelines:

B.5.1 Compliance with all applicable rules and regulations will be ensured;

B.5.2 Communication circuit benchmark tests should be performed once every three (3) years. Communication circuit verification tests should be performed at least annually. Degraded circuits should be promptly repaired and/or replaced;

B.5.3 Communications equipment problems detected by an alarm, reporting system, or multiplex components, will be acknowledged and/or responded to promptly, twenty-four (24) hours per day, seven (7) days per week;

B.5.4 All repeater sites are to be kept neat and free from all hazards and obstructions.

B.5.5 The Communication Facilities will be inspected by climbing all new or upgraded antenna towers within one (1) year after the communication system is placed in service and, subsequently, twenty percent (20%) of all antenna towers will be inspected every year;

B.5.6 All access roads will be kept passable and up to appropriate standards. All access road maintenance on public and private lands should be properly coordinated.

B.5.7 All tower lighting and marking installations will be maintained in accordance

with Federal Aviation Administration requirements;

B.5.8 All repairs and scheduled maintenance should be accomplished to avoid the simultaneous loss of use of both of the Project microwave communication paths that are Communication Facilities;

B.5.9 Continued viability of the grounding system for the Communication Facilities will be ensured;

B.5.10 Telecommunications and related equipment will be maintained on a regular schedule; and

B.5.11 Dependability of normal and emergency power supplies will be ensured.

B.6 SPARE PARTS GUIDELINES

Where practical, spare parts should be centrally stored to minimize storage costs and facilitate computer-based inventory system requirements. Warehoused spare parts will be available to maintenance personnel twenty-four (24) hours per day, seven (7) days per week. A suggested list of spare parts should be prepared by the Project Manager, in coordination with the Operating Agent and Western, and approved by the Management Committee.

APPENDIX C

OPERATIONS GUIDELINES

C.1 General Objectives

The Operating Agent, Western, and the Project Manager will provide for the daily operation of the Project in the manner necessary to ensure the Parties of the maximum benefit of their Entitlements. In arranging for operating work, and in preparing all guides, procedures, standards, schedules, and policies, the Operating Agent, Western, and the Project Manager will apply the following specific guidelines, in addition to Prudent Utility Practice and the general standards applicable to all Operation and Maintenance Work performed in accordance with this Agreement.

C.2 Specific Guidelines

Unless modified by the Management Committee, the Operating Agent, Western, and the Project Manager will adopt and apply the following guidelines in the performance of all Operation and Maintenance Work performed on the Project:

C.2.1 Arrange for and prepare procedures for switching orders to establish points of control on the Project, as necessary, and to ensure the safety of all switching and maintenance personnel;

C.2.2 Arrange for all necessary clearance approvals and coordination with others to ensure the safety of all personnel involved with Operation and Maintenance Work and to ensure the minimum disruption of service and interference with Entitlements;

C.2.3 Ensure the promulgation and application of standard operating procedures and protocols for routine and emergency operations, and ensure the development of mutual aid arrangements with appropriate entities;

C.2.4 Ensure that all required outages, all maintenance activities, and all repairs are coordinated among all those performing Operation and Maintenance Work and all other entities involved;

C.2.5 Ensure that all required communications among the Parties, others performing

Operation and Maintenance Work, and other entities involved in any aspect of Operation and Maintenance Work take place in a timely manner;

C.2.6 Ensure that all Operation and Maintenance Work is performed safely, consistent with all applicable standards and criteria, and in a manner that satisfies the requirements of this Agreement;

C.2.7 Ensure that all data necessary to satisfy the requirements of this Agreement are produced, stored, and reported in a manner consistent with the requirements of the Project Agreements; and

C.2.8 Ensure that all Operation and Maintenance Work is completed in a manner that is economically and environmentally sound.

APPENDIX D

ADMINISTRATIVE, GENERAL, AND OVERHEAD EXPENSES

D.1 WESTERN'S ADMINISTRATIVE AND GENERAL EXPENSES

For each direct hour of Operation and Maintenance Costs, four overhead rates, representing the Project's share of administrative and general expenses, will be applied. Within Western's Financial Management System (FMS), the Cost Distribution Subsystem (Subsystem) is the mechanism that uses direct labor hours as the basis for allocation of these indirect costs. Estimated expenses are divided by the estimated number of direct labor hours to determine the indirect cost rate in each category.

In the Subsystem, costs are accumulated in clearing accounts (indirect cost pools) on a daily basis and distributed to the true responsible benefiting activities, jobs, and work orders. The distribution process is performed at least monthly and is closely monitored using cost distribution reports generated by FMS. If an under-distribution or over-distribution of operating expense is disclosed, the distribution rate may be adjusted. At the end of the year, during the closing process, clearing accounts are adjusted to dispose of any remaining balances.

The four overhead rates are the Headquarters and Sacramento Area office Administrative and General Expenses (AGE) and the Headquarters and Sacramento Area office Associated Direct Expenses (ADE). Included in these costs are the following:

AGE - Labor and other expense, including contract support services, incurred by Western which are properly chargeable to utility operations but which are not chargeable directly to a particular operating function. Included are data processing and management costs.

ADE - The undistributed cost and expenses for all types of direct cost which possess a clear relationship (measurable with reasonable objectivity) to benefiting activities, but which for various purposes require initial accumulation into homogenous pools to reflect the total effort prior to distribution. This includes data processing costs, system-wide transmission expense, substation and switchyard general expense, and transmission lines general expense.

Calculation of AGE includes the deduction of General Western Allocation (GWA). The principle behind GWA is that costs that benefit the ratepayers at large, or that are incurred in establishing or maintaining the system as a whole should not be charged to cosponsored and reimbursable customers. GWA costs are distributed directly to power projects to be recovered as current period operating expenses in the Project's revenue requirement.

The FMS is designed to associate costs directly to specifically defined facility or non-facility work orders. Thus, if a cost is incurred that will benefit only one facility or non-facility work order, it is directly charged to that work order. It is a direct charge. Alternatively, if a cost is incurred that cannot be directly associated with one facility or non-facility work order, it automatically becomes an indirect cost. It is paid for from a clearing account and the cost is distributed over all work orders associated with that indirect cost rate.

D.2 WESTERN'S INDIRECT AND OVERHEAD COST

Western's administrative and overhead costs are in two categories--AGE and ADE. Western's FMS calculates the AGE costs, as a proportion of Direct Labor Charges (DLC) spent on the COTP, and includes costs of items such as office supplies, computers, and salaries of administrative and management staff who do not work directly on a given project. The organizational overhead costs, such as supervisors' and managers' salaries, both in Sacramento and Western's Headquarters, who do not directly charge the COTP

account are covered under ADE. Both the AGE and ADE costs are variable and are dependent on DLC and are applied on a monthly basis. The rates (percentages) are determined on an annual basis and adjusted as needed during the year.

D.3 EXAMPLE APPLICATION AND CALCULATION OF AGE AND ADE

Western Direct Labor and 1993 Revised Overhead Cost for O&M:

Electrical Engineer, DLC	100%	$24.21
Benefits	35%	8.47
HQ AGE, in % of DLC	22%	5.25
HQ ADE, in % of DLC	21%	5.10
SAO AGE, in % of DLC	45%	10.95
SAO ADE, in % of DLC	21%	5.09
Subtotal (Benefits + AGE + ADE)	144%	$34.86
Total (DLC + Benefits + AGE + ADE)/Hour =		$59.07

The SAO AGE and ADE were computed in the following manner:

SAO AGE:

Management and Supervision Costs	$3,704,189
Computer Operations Costs	$1,212,915
Sub-Total	$4,917,104
Less GWA (Governmental Agency Operating Costs)	$2,925,971
Total	$1,991,133
Divided by Direct Labor Hours	181,814
AGE Rate	$10.95 per hour

SAO ADE:

Data Processing Costs	$57,030
Transmission Lines General Expense	$194,858
Substation & Switchyard Gen. Expense	$261,382
System-Wide Transmission Expense	$273,140
Total	$786,410
Divided by Direct Labor Hours	154,473
ADE Rate	$5.09 per hour

Direct labor hours are estimated based on prior years actual plus or minus any expected changes. Direct labor hours vary because the two rates represent and are charged against two different labor pools. Headquarters AGE and ADE are computed by Headquarters using a similar process. AGE and ADE do not include power marketing or rate computation costs.

APPENDIX E

COST SHARING PERCENTAGES

E.1 Capital Improvement Costs, Except for Capital Improvement Costs Related to Replacements on the CVP Upgrade Segment, and Operation and Maintenance Costs Except for Operation and Maintenance Costs Related to Operation and Maintenance Work on the CVP Upgrade Segment. Subject to future modification in accordance with the IPA or the LTPA, whichever is effective, the Participants shall be responsible for paying Capital Improvement Costs, except for Capital Improvement Costs related to Replacements on the CVP Upgrade Segment, and Operations and Maintenance Costs, except for Operation and Maintenance Costs related to the CVP Upgrade Segment, in the following proportions:

E.1.1 The Agency, ~~85.2557~~ ~~79.9272~~ percent or ~~84.5890~~ ~~79.3022~~ percent;[1]

E.1.2 Western, ~~3.3333~~ ~~9.3750~~ percent;

E.1.3 DWR, 0.0000 percent;

E.1.4 Vernon, ~~8.0530~~ ~~7.5497~~ percent;

E.1.5 Southern San Joaquin, ~~2.2000~~ ~~2.0625~~ percent;

E.1.6 Shasta, ~~1.0246~~ ~~0.9606~~ percent or ~~1.6913~~ ~~1.5856~~ percent;[1]

E.1.7 Carmichael, ~~0.0667~~ ~~0.0625~~ percent; and

E.1.8 San Juan, ~~0.0667~~ ~~0.0625~~ percent.

E.2 Capital Improvement Costs Related to Replacement on the CVP Upgrade Segment, the Olinda Substation, the Maxwell Compensation Station, and the Tracy Substation Expansion, and Operation and Maintenance Costs Related to Operation and Maintenance Work on the CVP Upgrade Segment, the Olinda Substation, the Maxwell Compensation Station, and the Tracy Substation Expansion. Subject to future modification in accordance with the IPA or the LTPA, whichever is effective, the Participants shall be responsible for paying the Capital Improvement Costs and Operation and Maintenance Costs attributable to the CVP Upgrade Segment in the following proportions:

POMA

E.2.1 The Agency, 67.3072 percent or 66.7808 percent;[1]

E.2.2 Western, 23.6843 percent;

E.2.3 DWR, 0.0000 percent;

E.2.4 Vernon, 6.3576 percent;

E.2.5 Southern San Joaquin, 1.7368 percent;

E.2.6 Shasta, 0.8089 percent or 1.3353 percent;[1]

E.2.7 Carmichael, 0.0526 percent; and

E.2.8 San Juan, 0.0526 percent.

[1] A dispute exists as of the effective date of this Agreement between the Agency and Shasta regarding the level of their respective right, title, interest, ownership, and Entitlement in the Project. This Appendix will be modified, as necessary, to reflect the final resolution of such dispute and such modification shall not require amendment of this Agreement.

APPENDIX F

ADDRESSES FOR NOTICES

To Transmission Agency of Northern California:
Chairman
3100 Zinfandel Drive (95670)
P. O. Box 15129
Sacramento, CA 95851-0129

To Western Area Power Administration:
Area Manager
1825 Bell Street, Suite 105
Sacramento, CA 95825

To City of Vernon:
City Administrator
4305 Santa Fe Avenue
Vernon, CA 90058

To Southern San Joaquin Valley Power Authority:
Manager
2100 "F" Street, Suite 100
Bakersfield, CA 93301

To Shasta Dam Area Public Utility District:
General Manager
1650 Stanton Drive
P. O. Box 777
Central Valley, CA 96019

To Carmichael Water District:
Director
7001 Fair Oaks Boulevard
Carmichael, CA 95608

To San Juan Suburban Water District:
General Manager and Secretary
9935 Auburn Folsom Road
P. O. Box 2157
Roseville, CA 95746

To California Department of Water Resources:
Power Manager, Division of Operations and Maintenance
1416 9th Street (95814)
P. O. Box 94236
Sacramento, CA 94236-0001

TANC-WESTERN OPERATION AND MAINTENANCE AGREEMENT

Coordination with Western

TANC and Western cooperate directly on O&M activities primarily under the guidance of two agreements – the Project Operation and Maintenance Agreement (POMA) and the Agreement Between Transmission Agency of Northern California and Western Area Power Administration for Certain California-Oregon Transmission Project Operation and Maintenance Activities (also referred to as the TANC-Western Operation and Maintenance Agreement, or "TWOMA"). These two agreements set forth the roles and responsibilities of TANC and Western with respect to COTP (i.e., Project) O&M.

Maintenance responsibilities for both transmission tower and communication site access roads are not explicitly stated in both agreements. Ascertaining these responsibilities requires examination of the two agreements. Section 6 of the POMA applies to O&M work, and states that:

> *Western is hereby designated as the Operating Agent for the Project until otherwise determined by the Management Committee and shall perform the duties and responsibilities of the Operating Agent, in addition to Western's other responsibilities, set forth in this Agreement. As the Operating Agent, Western shall fulfill the duties specified in the POMA consistent with the law of the State of California* (Governing Law: POMA Section 25).

Section 6.2 of the POMA, titled "Responsibilities and General Authority," further clarifies the responsibilities of Western and TANC. Subsection 6.2.2 states that:

> *Western shall be responsible for the Operation and Maintenance Work for the CVP Upgrade Segment, for the Olinda Substation, for the Maxwell Compensation Station, for the Tracy Substation Expansion, and for certain Communications Facilities therewith.*

Subsection 6.2.2.4 further clarifies that:

> *Western's responsibility for Operation and Maintenance Work on Communication Facilities shall include all such facilities of the Project located at each of the following sites: 1) Olinda Substation; 2) Maxwell Compensation Station; 3) Tracy Substation expansion; 4) Elverta; and 5) Western's Sacramento Area Office Dispatch Center.*

Subsection 6.2.3 states that:

> *The Project Manager shall be responsible for the Operation and Maintenance Work for the Northern Segment, for the Tesla By-Pass Segment, and for Communications Facilities associated therewith.*

Subsection 6.2.3.3 further clarifies, regarding Communication Facilities, that:

> *The Project Manager's responsibility for Operation and Maintenance Work on Communications Facilities shall include all such facilities of the Project located at each of the following sites: 1) Timber Mountain; 2) Happy Camp; 3) Widow Mountain; 4) Big Valley; 5) Bear Springs; 6) Manzanita; 7) Hooker; 8) Round Mountain; 9) Corning; 10) Logan Creek; 11) Sites; 12) Rumsey; 13) Berryessa Peak; 14) Davis; 15) Elk Grove; 16) Sugarloaf; 17) Pixley; 18) Vollmer; 19) Highland Peak; 20) Skeggs Point; 21) Mount Oso; and 22) Pacheco Peak, and any other site that is not the operation and maintenance responsibility of Western.*

The POMA, therefore, allocates O&M responsibilities by facilities and sites, but does not clarify whether either "facility" or "site" includes or excludes access roads. The POMA definitions of Communications Facilities (§ 4.7) Northern Segment (§ 4.24), Project (§ 4.33), Tesla By-Pass Segment (§ 4.45) may refer to facilities, but do not refer to access roads. The terms "Facility" and "Site" are not defined in the POMA.

Section 6.5 of the POMA, titled "Generally Applicable Duties and Responsibilities" states that:

> *The Operating Agent, Western, and the Project Manager each for its areas of responsibility, shall cooperate to perform or cause the performance of …Procurement (§ 6.5.5) that references POMA Appendix B.*

Section B5 applies to Communication Facilities Maintenance Guidelines, and specifically mentions access roads under subsection B5.6, which states that:

> *All access roads will be kept passable and up to appropriate standards. All access road maintenance on public and private lands should be properly coordinated.*

Based on the POMA, generally applicable access road maintenance responsibilities for Western and the Project Manager (TANC) are as follows:

> <u>Western</u>:
>
> Access roads associated with: 1) Olinda Substation; 2) Maxwell Compensation Station; 3) Tracy Substation expansion; 4) Elverta; and 5) Western's Sacramento Area Office Dispatch Center.

TANC:

Access roads associated with: the Northern Segment, the Tesla By-Pass Segment, and for Communications Facilities associated therewith, including: 1) Timber Mountain; 2) Happy Camp; 3) Widow Mountain; 4) Big Valley; 5) Bear Springs; 6) Manzanita; 7) Hooker; 8) Round Mountain; 9) Corning; 10) Logan Creek; 11) Sites; 12) Rumsey; 13) Berryessa Peak; 14) Davis; 15) Elk Grove; 16) Sugarloaf; 17) Pixley; 18) Vollmer; 19) Highland Peak; 20) Skeggs Point; 21) Mount Oso; and 22) Pacheco Peak, and any other site that is not the operation and maintenance responsibility of Western.

Section 6 of the TWOMA, which deals with Contract work (by Western for TANC) further explains Western's responsibilities as the Operating Agent, and states that, for the Northern Segment, the Tesla By-Pass Segment, and specified Communication Facilities, Western will have the right to enter Project properties and shall perform or cause the performance of the activities set forth in Section 6 and will maintain Project facilities in good repair and with as high availability as possible, all in accordance with the work standards and contracting procedures set forth in the POMA.

Section 6.1 of the POMA, which refers only to transmission lines, states generally that maintenance activities for the Northern Segment and Tesla By-Pass Segment will include both scheduled and unscheduled activities such as (TANC 1993a):

- Periodic aerial line patrol each calendar quarter (§ 6.1.1)
- Annual ground line patrol (§ 6.1.2)
- Removal and control of trees, brush, and weeds (§ 6.1.4)
- Power line patrol for road maintenance and inspection of drainage culverts for plug-ups and overflows (§ 6.1.5)
- Accompany various individuals to job sites ((§ 6.1.16).

Section 6.2 of the TWOMA states that Communication Facilities to be maintained by Western shall include: 1) Timber Mountain; 2) Happy Camp; 3) Widow Mountain; 4) Big Valley; 5) Bear Springs; 6) Manzanita; 7) Hooker; 8) Round Mountain; 9) Corning; 10) Logan Creek; 11) Sites; 12) Rumsey; 13) Berryessa Peak; 14) Davis; 15) Elk Grove; 16) Sugarloaf; 17) Pixley; 18) Vollmer; 19) Highland Peak; 20) Skeggs Point; 21) Mount Oso; and 22) Pacheco Peak or its equivalent.

Subsection 6.2.2 of the TWOMA further states that maintenance activities for these communications sites will include scheduled and unscheduled:

- *Semi-annual site visits to inspect, adjust, clean, and repair station service-related equipment, including the ;building, batteries and charger, heaters and air conditioners, antenna towers and waveguides, auxiliary power supplies, including emergency generators, if any, and such other maintenance as required to provide for an operational system (§ 6.2.2.1)*

- *Test and adjust the signal strength, frequency, and voltage levels, as required (§ 6.2.2.2); and*

- *Troubleshoot and repair equipment associated with unscheduled maintenance (§ 6.2.2.3).*

The TWOMA, therefore, is consistent with the POMA in allocating access road maintenance responsibilities.

Other relevant provisions of the TWOMA state that Western shall:

- Comply with all state and federal laws, regulations, permits, and licenses respecting environmental protection

- Provide monthly and other periodic and special reports to TANC concerning the progress and cost of Contract Work performed

- Assist TANC in preparing any procedures, guidelines, practices, lists, reports, schedules, and budgets which the Management Committee directs be prepared with respect to any aspect of the Contract Work undertaken in accordance with this (TWOMA) Agreement (TANC 1993a).

Western and TANC regularly coordinate access road maintenance activities, and work cooperatively to see that needed work is completed. The process whereby access road maintenance needs are identified is discussed in further detail below.